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BRITISH INTELLIGENCE SURVEY

GAMBIA, GHANA, NIGERIA
AND
SIERRA LEONE

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AIRFIELDS AND FLYING-BOAT BASES

DEFE 60/227

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Defence Intelligence Staff

Ministry of Defence

London

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IMPORTANT

1. To ensure that amendments, Airfield Check Bulletins and revised editions of this handbook are correctly distributed it is essential that DI/13d/4 should be notified immediately of:-

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Metropole Buildings,
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BRITISH INTELLIGENCE SURVEY

PART VI (AIRFIELDS)

J5/93 GAMBIA, GHANA, NIGERIA AND SIERRA LEONE

TO ALL HOLDERS OF THE J5/93 AIRFIELD HANDBOOK

1. This handbook is now obsolete. No further updating action will be taken and the handbook is to be destroyed.

2. No replacement airfield handbook for the above-mentioned countries will be issued but information about principal and other selected airfields is available in REGIONAL STUDY RS/103/003/L(AF), "Airfields in Africa and the Middle East - WEST AFRICA", of which the current issue is dated February 1973.

3. Should there be a requirement for the latest information on any particular airfield, this may be obtained from the Defence Intelligence Staff, DI35b, Ext 5874.

DEFENCE INTELLIGENCE STAFF
MINISTRY OF DEFENCE
METROPOLE BUILDING
NORTHUMBERLAND AVENUE
LONDON WC2N 5BL

AUGUST 1973

D.I. 55.C.

Mrs Cotton

RESTRICTED

TO BE RETAINED WITH THE HANDBOOK TO WHICH IT REFERS

AIRFIELD CHECK BULLETIN

NUMBER 04 DATE JANUARY 1971

HANDBOOK TITLE GAMBIA, GHANA, NIGERIA AND SIERRA LEONE REF. J5/93

DATE OF LAST AMENDMENT ~~DECEMBER~~ 1969 NOVEMBER 1970. NUMBER # 2.

This Bulletin provides notification of the more important changes to information published in this handbook up to and including the amendment referred to above. The items listed below will be promulgated for incorporation in the handbook in due course, meanwhile the Airfield Check Bulletin is to be retained for reference purposes and should be consulted whenever the handbook is used. This Bulletin supersedes the previous issue which is now to be destroyed. Items published for the first time are marked with a double asterisk (**). Holders of the handbook who are without the amendment shown above, or any preceding amendment, should apply for copies.

GAMBIA

** BATHURST/YUNDUM	Runway lighting has been re-installed on runway 14/32. There is still no approach lighting on either runway. Obstructions A lattice mast, 100 ft above airfield level, is located on a bearing and distance of 100 degrees and 1,935 ft from the threshold of runway 14. It carries a red obstruction light. (UNCLASSIFIED)

GHANA

KOTOKA INT	No change. (UNCLASSIFIED)
** KUMASI	A report dated Sept 1970 indicated that the existing 4,500 ft runway is to be extended by 2,000 ft. No date for commencement, or completion, was given. (UNCLASSIFIED)
** SUNYANI	It is understood that temporary improvements to ATC Terminal and Communication facilities are to be carried out, pending a more ambitious plan for the future. No dateswere given. (UNCLASSIFIED)

Defence Intelligence Staff, DI.35.
Ministry of Defence, London.

RESTRICTED

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GHANA (CONT)

TAKORADI	No change. (UNCLASSIFIED)
** TAMALE (NEW)	This airfield is still under construction. The latest information indicates the runway will be 6,500 x 150 ft asphalt, when completed. Progress is slow and final completion is unlikely before 1972. (UNCLASSIFIED)

NIGERIA

ENUGU) IBADAN)	No change.
JIBU	A new private landing ground located at JIBU, BENU/PLATEAU state. Position 08° 19'N 09° 57'E. 650 ft AMSL. Runway 04/22 2260 x 60 ft laterite. Operated by Sudan United Mission. (UNCLASSIFIED)
KANO	No change (UNCLASSIFIED)
LAGOS	Work on a 1,400 ft extension to runway 188°/008° commenced in January 1970 and is continuing. When completed the runway will be 9,000 ft long. Some repairs and improvements to the taxi-ways commenced in March 1970. (UNCLASSIFIED)

NIGERIA

MAKURDI	Work was in progress in March 1970, resurfacing and draining runway 23/05. This work is continuing. (UNCLASSIFIED)
MAIDUGURI	No change.
UGHELLI	This Shell/BP operated airstrip was closed to all operations in March 1970. (UNCLASSIFIED)
YOLA	Runway 03/21 was being resurfaced in June 1970. No further information available. (UNCLASSIFIED)

SIERRA LEONE

FREETOWN/LUNGI	No change.

BRITISH INTELLIGENCE SURVEY

GAMBIA, GHANA, NIGERIA and SIERRA LEONE

PART VI - AIRFIELDS AND FLYING-BOAT BASES

AMENDMENTS INCORPORATED

REPORT		REPORT ENTERED BY:-		REPORT		REPORT ENTERED BY:-	
.	Date	Name	Date	No.	Date	Name	Date
	Dec' 1969		31/7/70				
	Nov. 1970		6/11/70				

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September 1968

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NOTE

The Defence Intelligence Staff would welcome the views of users of this report on:

(a) any statements considered incorrect.

(b) any notable omissions.

GAMBIA, GHANA, NIGERIA AND SIERRA LEONE

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	West Africa Part 2 (covering Ghana and Nigeria)	1 to 10 incl.	Sept 1968
III	GENERAL INDEX OF AIRFIELDS	1 to 3 incl.	Dec 1969
IV	GAMBIA		
	Schedule of Airfields and Alternative Names	1	Dec 1969
	Annex - Information Sheet BATHURST/YUNDUM	2	Sept 1968
		Separate plan	Nov 1969
	Appendix 'A' - Former Landing Grounds	1	Dec 1969
V	GHANA		
	Schedule of Airfields and Alternative Names	1 to 4 incl.	Dec 1969
		5 to 6 incl.	Sept 1968
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	KOTOKA INT.	2	Dec 1969
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	KUMASI	2	Dec 1969
	TAKORADI	2	Dec 1969
		Separate plan	Sept 1968
	TAMALE	1	Dec 1969
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APPENDIX 'B' - AIRFIELD LOCATIONS MAP (in pocket on end cover)	1	Nov 1969

BRITISH INTELLIGENCE SURVEY

GAMBIA, GHANA, NIGERIA and SIERRA LEONE

I. INTRODUCTION

AIRFIELDS

BRITISH INTELLIGENCE SURVEYS

1. The British Intelligence Survey (BIS) comprises a series of studies on subjects of particular interest to Service staffs. This study concerns airfields in the West African countries of Gambia, Ghana, Nigeria and Sierra Leone.

SCOPE AND FORM

2. This handbook of airfields and flying-boat bases supersedes handbooks J5/62 West Africa Vols. I and II and amendments previously issued in respect of these countries by J/5 or DI.35.

3. It provides all known basic information on airfields and flying-boat bases presented in form and detail compatible with their relative importance and includes all data accepted up to the indicated dates of compilation.

4. Section II presents short meteorological notes on conditions affecting air operations and airfield serviceability within the general area covered by the handbook.

5. At Section III is a general index of all usable airfields in the countries concerned, whilst Sections IV, V, VI and VII contain the basic information on airfields in each country.

6. The basic airfield information in this handbook is published and kept up-to-date in the following forms:-

a. Schedule of Airfields

This lists all known airfields, landing grounds, flying-boat bases and alighting areas. For minor fields the schedule is complete in itself, giving sufficient information to meet the average requirement. In the case of the more important airfields the schedule directs the users' attention to the relevant information sheet.

b. Information Sheets (Annex to Schedule)

These, which in most cases are accompanied by airfield plans, give detailed information on airfields and flying-boat bases.

c. List of Former Landing Grounds (Appendix "A")

This gives the names, co-ordinates and brief details of all landing grounds which for various reasons are no longer suitable for use. Such reasons may include obstruction due to over-building or other causes, reversion to agriculture, etc. Temporary abandonment or mere disuse would not necessarily qualify a landing area for reclassification to FLG and in such cases it would continue to be shown in the Schedule of Airfields or Information Sheet section as appropriate. The list also includes former flying-boat bases and alighting areas.

d. Airfield Locations Map (Appendix "B")

An outline map which shows the distribution of all major and other important airfields is included at the end of the volume.

e. Amendments and Check Bulletins

This publication will be kept up to date by means of:-

(1) Amendments. These are normally issued at regular yearly intervals and may include new and/or revised airfield information sheets and plans, maps, schedules, annexes and appendices. However, if considered necessary, an amendment may be issued at any time.

To avoid a handbook becoming out-of-date and possibly dangerously misleading, care must be taken to incorporate amendments as instructed.

(2) Airfield Check Bulletins. These are issued at six-monthly intervals and whenever the country concerned is of special current intelligence and/or planning interest. They convey the more important changes in information arising between amendments particularly items affecting capability and capacity assessments. The current Airfield Check Bulletin (ACB) is to be retained in the appropriate pocket at the front of the handbook and should be consulted whenever the handbook is used.

Terms of Classification

7. a. "Airfields" and "Landing Grounds": These broad terms are used to differentiate between those fields relatively well equipped for aircraft operations and those possessing few or no permanent facilities. However, both terms may also be used in a generic sense when referring to landing areas in a general way, regardless of their standard of equipment.

b. "Flying-Boat Bases" and "Flying-Boat Alighting Areas": The same distinction is made here as in the case of airfields and landing grounds.

c. "Former Landing Grounds": This term is used to describe any airfield or landing ground believed to be permanently abandoned or which is no longer usable.

Abbreviations

8. The following abbreviations may be found in this publication.

a/c	Aircraft
A/F	Airfield
Admin	Administrative
AHQ	Air headquarters
AMSL	Above mean sea level
ASP	Aircraft Servicing platform
AUW	All-up weight
Avgas	Aviation gasoline
A/W	All-weather
BGN	Board of Geographical Names
C.	Centigrade
D/F	Direction finding
Elev'n	Elevation
ELG	Emergency landing ground
est	Estimated
ESWL	Equivalent single-wheel load
F	Fahrenheit
FBAA	Flying-boat alighting area
FBB	Flying-boat base
FLG	Former landing ground

F/W	Fair-weather
GCA	Ground Control Approach
GPM	Gallons per minute
GSGS	Geographical Section General Staff
HF	High Frequency
HQ	Headquarters
h/s	Hardstanding
HT	High tension
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
ISWL	Isolated single-wheel load
LCN	Load Classification Number
LG	Landing ground
(M)	Magnetic bearing
Met	Meteorological
MF	Medium frequency
MSL	Mean sea level
M/T	Motor Transport
NAF	Nigerian Air Force
nm	Nautical mile(s)
Oct	Octane
ORP	Operational readiness platform
o/r	On request
PCGN	Parliamentary Committee for Geographical Names
POL	Petrol, oil and lubricants
psi	Per square inch
PRU	Photographic Reconnaissance Unit
PSP	Pierced steel plank
Recce	Reconnaissance
RP	Reference point (from which bearings and distances are taken)
R/T	Radio telephony
R/W	Runway
Sqn	Squadron
TP	Tyre pressure (in lb sq. inch)
T/sq. ft	Tons per sq. ft
T/T	Taxi-track
u/c	Under construction
UFN	Until further notice
u/g	Underground
u/s	Unserviceable
VHF	Very High Frequency
VLR	Very Long Range
VMC	Visual met. conditions
WBC	Weight-bearing capacity
wef	With effect from
WIP	Work in progress
W/T	Wireless telegraphy

Maps

9. The relevant map series and sheet used for calculation of position, establishment of co-ordinates and for descriptive purposes, are indicated on all information sheets.

10. The following map series have been used in this Handbook:-

GSGS 4695 (1:1,000,000)

G504 (1:250,000)

Spelling of Airfield and Place Names

11. As far as possible airfields are reported under the names by which they are known in the country concerned. Spelling is as given in the relevant map series used in compiling the airfield information sheets, or alternatively conforms to the agreed PCGN/BGN spelling.

Co-ordinates and Local Positions

12. Unless otherwise stated, airfield co-ordinates are:-

a. Those of the airfield reference point (RP), calculated as described below.

b. The approximate centre of the buildings at a flying-boat base.

c. The centre of the alighting area at a flying-boat alighting area.

13. Co-ordinates are given to the nearest minute, and where the precise position is not known, the degrees and minutes are given followed by the word "approx." or "town" as appropriate. Wherever possible the UTM or military grid reference is also given.

14. For local positions, unless otherwise stated, directions are given and distances calculated in nautical miles from the centre of a town, village or prominent natural feature to the airfield reference point.

15. The established co-ordinates or grid reference position of an airfield are based on a precise reference point. The location of an airfield reference point is determined in the following ways:-

a. At an airfield possessing one runway or prepared strip, the RP is the centre point of the runway or strip and equidistant from each end.

b. Where two or more runways or strips intersect at one point the RP is the point of intersection; where the runway pattern forms an interior triangle the RP is the centre point obtained by angular bisection. Runway patterns forming two or more interior triangles are treated in the same way and a common centre calculated by geometrical methods.

c. Where two runways are parallel or in approximate parallel juxtaposition the RP is the centre of a line connecting the two centre points of the runways.

d. In the case of two diverging runways up to an angle of 90 degrees and separated or connected at one end, the RP is the centre point of a line joining the centre points of each runway.

e. Where runways are widely separated or the divergence is greater than 90 degrees the RP is calculated as the centre of a line joining their nearest ends.

f. For non-runway, natural surface area fields, the RP is the point of intersection of diagonals drawn within the smallest rectangle which will contain the field, ie, maximum length x maximum width.

Elevation

16. Unless otherwise stated:-

a. The airfield elevation as shown in information sheets and plans is that of the highest known point of the usable landing area expressed in feet above mean sea level. Where this is not known the elevation given is that quoted by the most authoritative source available.

b. All spot heights on location maps, the heights of major physical features, etc. not in the immediate vicinity of the airfield and listed on information sheets under "Obstructions" are given in feet above mean sea level.

c. The heights of local obstructions and hazards shown on airfield plans and information sheets, such as W/T masts, trees, chimneys, HT cables, etc, are expressed in feet above airfield level where possible.

Weight-Bearing Capacities

17. Reliable figures for the weight-bearing capacities of surfaces are often difficult to obtain and, in many cases, do not exist. Load Classification Numbers, the best method of expressing weight-bearing capacities, are available for comparatively few airfields, as actual figures can be ascertained only from tests needing bulky and complicated equipment on the site under investigation. However, in some cases a runway is constructed to a specified Load Classification Number (LCN) or, where sufficient details are held of its composition and the way it stands up to use by various types of aircraft, an assessment of its approximate LCN can sometimes be made.

18. Wherever they are available, LCNs are given on information sheets. Otherwise weight bearing capacities are expressed in terms of single wheel loadings or, less satisfactorily, as all-up-weights of aircraft. If these are not available the information sheet gives the heaviest type of aircraft known to be using the surface or an assessment of the type of aircraft that it could probably sustain. In some cases the figures or types of aircraft quoted are limitations laid down by the authorities concerned to protect the surface from damage.

19. Unless qualified, all statements on weight-bearing capacity relate to sustained use. For a limited number of operations greater weights can often be accepted and, where reliable LCNs are available, the extent to which this could be done without damage to surfaces is predictable within limits. Otherwise only actual experience will provide the answer, as the way in which a runway will stand up to use by aircraft heavier than those for for which it was designed cannot be forecast with any certainty.

20. Details of the LCN system and its application are given in the document "Airfield Design and Evaluation", Technical Publication No. 109/59 issued by the Directorate General of Works (Air), Ministry of Defence.

Radio Aids

21. Information under this heading is given in one or more of the following main categories:-

a. R/T and/or W/T Contact. This indicates that there are ground-air or point-to-point communications at the airfield.

b. Homing Facilities. This generalisation covers anymedium range navigational system which enables pilots to select the correct course to the airfield.

c. Blind Approach Equipment. This term covers all types of final approach aids used under varying conditions of visibility to effect correct alignment of the aircraft with the runway.

Aviation Fuel Storage

22. Whenever possible, airfield information sheets will give details of the type of installation, its location, capacity and equipment.

Aviation Fuel

23. Details of quantities and specific grades of fuel held will not be given in the handbook. This information should be obtained from Ministry of Defence (Air), DDE 10 (RAF) E 19a, or from the SESO in overseas commands in respect of overseas military and civil fields used by RAF aircraft. In the case of ICAO member states similar information on important overseas civil airfields may also be obtained from the relevant AGA sections of the Aeronautical Information Publications (AIP) of the countries concerned.

24. When fuel is available it will be reported under two standard headings:-

a. Jet Fuel. This generalised term will cover:-

AVTUR	F 30	F 34	JP 1
AVTAG	F 40	-	JP 4
AVCAT	F 42	-	JP 5

b. AVGAS. This term will cover aviation gasolene of any octane rating.

Airfield Location Maps and Plans

25. The composite location map and airfield plan supplementing the airfield information sheet indicates the local position of an airfield and shows its general layout. It is designed for intelligence briefing, planning, targeting, interrogation and similar purposes, and to assist the military study of any given airfield. Airfield plans should not be used as landing charts without prior consultation with DI.35.

26. For various reasons it is not practicable to issue amended plans as frequently as revised information sheets and they are liable to get out of date. It will be appreciated also that additional information, or a report of development, is often received in a form which is impossible to record pictorially. Photographs, plans, sketches and any illustration matter are therefore of the greatest value and should be forwarded to DI.35 whenever possible.

27. Plans should always be studied in conjunction with the relevant information sheets and any difference between the dates of issue noted.

Date of Information

28. a. Information Sheets. The date shown is the date of compilation and all accepted information available at the time is included. Particular items may bear the exact date of the information if the likelihood of subsequent change makes it desirable.

b. Airfield Plans. These are correct in their major features to the date given on the plan but changes of a minor character may not always be shown. (See also foregoing paragraph headed "AIRFIELD LOCATION MAP AND PLANS").

REQUESTS FOR INFORMATION

29. Requests for additional information should be addressed to:-

Defence Intelligence Staff, (DI.35)
Ministry of Defence
Northumberland Avenue,
LONDON, W.C.2.

Telephone: 98-930 7022, Extension 5840

DIS/DI.35

September 1968

II METEOROLOGICAL NOTES

West Africa - Part 1 (covering Gambia and Sierra Leone)

Acknowledgement:- These Notes have been prepared by the Meteorological Office in conjunction with the Naval Weather Service.

1. General

The area covered by these Notes extends from the southern edge of the Sahara in the north to the Gulf of Guinea in the south. In the west it is bordered by the Atlantic coast and in the southeast by the western frontiers of south Liberia and the Ivory Coast. The climatic regions of this area vary from the hot, dry desert of the north to the tropical rain forests of the south.

The table below gives a list of places mentioned in these Notes.

Station	Latitude °N	Longitude °W	Height ft
Fort Gouraud	22°41'	12°42'	978
Port Etienne	20°56'	17°03'	23
Araouane	18°54'	03°33'	935
Timbuktu	16°46'	03°01'	988
Gao	16°16'	00°03'	902
Dakar	14°44'	17°30'	75
Kayes	14°26'	11°26'	98
Bathurst (Yundum)	13°21'	16°40'	90
Bamako	12°35'	07°53'	1,116
Koutiala	12°24'	05°28'	1,217
Kabala	09°34'	11°31'	1,680
Conakry	09°31'	13°43'	23
Freetown (Lungi)	08°37'	13°12'	87
Daru	08°00'	10°51'	624

2. Seasonal weather and weather changes

In the area to the north of 13°N there are two main seasons as follows:-

Winter (November to April)

In this season the winds are mainly northeasterly, cloud and precipitation amounts are small but the visibility is frequently reduced by sand haze or, in the more arid areas, by sandstorms. Temperatures over most of this region are at their minimum throughout this season but, however, in the extreme south of this region temperatures in March and April are often as high as those of the summer season.

Summer (May to October)

In most districts temperatures are at their highest but in the extreme south of the area (between 13 and 14°N) the temperatures are often at their maximum during May. Cloud and precipitation amounts are at their greatest but in the extreme north of the area there are normally only small amounts of cloud and very little precipitation.

To the south of 13°N there are also two main seasons which are:-

The wet season (May to September in the north and March to November in the south)

This is the season of the Southwest Monsoon. Both cloud and precipitation amounts are at their maximum and temperatures, especially along the coast, are usually at their lowest.

At the beginning and end of this season, severe line squalls, which are known locally as 'tornadoes', affect the area.

The dry season (October to April in the north and December to February in the south)

During these months the surface winds are normally from the northeast and both cloud and precipitation amounts are usually small. Temperatures at the end of this season are usually the highest of the year.

A summary of the main features of the climate is given at the end of these Notes.

3. Temperature and humidity

Temperatures

In the coastal areas there is normally little seasonal variation of temperature and the difference in average temperature between the warmest and coolest months is usually little more than 5°C but further inland the annual range is usually considerable, for example at Gao the average temperatures range from 21°C in January to 34°C in May. There are, of course, considerable year to year variations in temperature.

In January the average daily maximum temperatures are some 26 to 34°C, both on the coast and inland, whilst the average daily minima are 23 to 13°C along the coast and 17 to 10°C further inland. Temperatures as high as 45°C or as low as 1°C have been recorded.

In July, the average daily maxima are 27 to 31°C along the coasts and 31 to 44°C further inland. The average daily minima are 24 to 18°C on the coast and 27 to 21°C inland. Temperatures as high as 50°C or as low as 12°C have been recorded.

The highest temperatures are normally experienced between March and June and exceptional temperatures as high as 54°C have been recorded at this time of year in some of the more northern districts.

The coolest months are normally November to February and temperatures as low as 0 or -1°C have occurred in some of the inland districts.

The average height of the 0°C isotherm is about 14,000 to 15,000 feet throughout the year and the day to day variations are normally small.

The tables below give the average daily maximum and minimum temperatures for a number of places in this part of Africa.

Average Daily Maximum Temperatures (°C)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Port Etienne	13	26	26	26	27	28	29	27	29	31	30	28	25	28
Timbuktu	14	31	34	38	42	43	43	39	36	39	40	37	32	38
Bathurst (Yundum)	14	31	32	34	33	31	31	30	29	31	32	32	31	31
Bamako	11	33	36	39	39	39	34	32	31	32	34	34	33	35
Conakry	13	31	31	31	32	31	29	28	27	29	30	31	31	30
Freetown (Lungi)	14	30	31	31	31	31	29	28	27	28	29	30	30	30

Average Daily Minimum Temperatures (°C)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Port Etienne	13	13	13	14	14	16	17	18	19	20	18	16	14	16
Timbuktu	14	13	14	19	22	26	27	25	24	24	23	18	13	21
Bathurst (Yundum)	14	15	16	17	18	19	23	23	23	23	22	18	16	19
Bamako	11	16	19	22	24	24	23	22	22	22	22	18	17	21
Conakry	13	22	23	23	23	24	23	22	22	23	23	24	23	23
Freetown (Lungi)	14	23	23	24	25	24	23	23	23	23	22	23	23	23

Wet bulb temperatures

A combination of high temperature and high humidity renders conditions oppressive, and continuous physical exertion in still air is considered undesirable, if not impracticable, when the wet bulb temperature exceeds about 26°C.

At many coastal stations this value is frequently exceeded at some time of the day in the wet season, but less often during the dry months. High wet bulb temperatures are very infrequent in inland areas.

Humidity

At about 0800 local time, on the coast, the relative humidities average, during the dry season, some 60 to 70% in the west and 80 to 85% in the east. In the afternoon they are 50 to 60% in the west and 60 to 70% in the east. During the wet season the conditions are very humid and relative humidities are around 80 to 85% in the morning and 70 to 80% in the afternoon in the western coastal districts and 75 to 90%, irrespective of time of day, further eastward.

Inland the air is very much drier and relative humidities are normally about 30 to 35% in the morning and 15 to 30% in the afternoon during the dry season but 60 to 80% in the morning and 40 to 70% in the afternoon during the wet season. In general, the driest conditions are to be found in the northeast.

4. Precipitation

Amount

The start and finish of the Southwest Monsoon usually marks the beginning and end of the wet season. In the north the wet season lasts from about May to September but it gradually lengthens towards the south and in the extreme south of the area it lasts from March to November and, in fact, in this southern region some rain is recorded even in the dry season.

In the southern coastal districts the average annual rainfall amounts range from about 21 inches at Dakar to 132 inches at Freetown (Lungi) and 169 inches at Conakry. Inland, amounts are generally smaller, ranging from about 90 inches at Kabala to 39 inches at Koutiala. In the north, amounts are small both inland and on the coast. They are about one inch at Port Etienne and Araouane but increase southwards to about 30 inches at Kayes.

Number of days with 0.004 inches or more

As would be expected in an area where the terrain varies from the arid deserts of the extreme north to the tropical rain forests of the south there is an appreciable variation in the number of days with rain.

On the coast of the extreme north, at Port Etienne, there are about 8 days a year with at least 0.004 inches of rain whilst in the inland areas the averages are around 25 days, although some inland regions have only one or 2 days a year with rain.

There is a steady increase southwards so that along the southern coast the averages are between 100 and 150 days a year.

Heavy falls in 24 hours

Heavy falls in a day can occur in almost any part of the area but without doubt the largest falls are experienced in the south. In the north, these heavy falls are of the order of 3 to 5 inches but in the south falls of 10 inches or more have been recorded. These extremely heavy falls usually occur during the months June to August but falls of 3 to 5 inches are still quite frequent in the other months of the rainy season and, in some southern areas, they are not unknown even in the dry season.

The table below gives mean monthly precipitation data for 8 stations in this area.

Average Monthly Precipitation (inches)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Port Etienne	33	*	*	*	*	*	*	*	0.1	0.3	0.2	0.2	0.1	0.9
Araouane	10	*	*	0	0	0	0.2	0.2	0.5	0.6	*	*	*	1.5
Timbuktu	30	*	*	*	*	0.2	0.8	2.6	3.0	1.5	0.1	*	*	8.2
Dakar	26	*	*	*	*	*	0.7	3.5	10.0	5.2	1.5	0.1	0.3	21.3
Bathurst (Yundum)	15-16	*	*	*	*	0.3	2.8	11.3	21.4	12.3	3.9	0.5	0.5	53.0
Bamako	35	*	*	0.2	0.7	2.7	5.5	9.1	13.2	8.3	2.4	0.4	*	42.5
Conakry	28	*	*	0.2	0.7	6.2	22.2	52.0	41.6	28.2	13.0	4.8	0.4	169.3
Freetown (Lungi)	16	0.5	0.2	1.0	2.8	8.5	14.8	30.8	32.6	21.5	12.0	5.9	1.5	132.1

*less than 0.1

Snow and snow lying

Snow is unknown in this part of Africa.

Hail

Hail occurs at times, usually in association with thunderstorms. It is infrequent and is normally reported on less than one day a year in any part of the area.

Thunderstorms

Thunderstorms are quite frequent on the southwestern coast but they decrease in frequency towards the north. Thunder is heard on an average of about 6 days a year in the north at Port Etienne, 30 days further to the south at Dakar, 92 days at Bamako and 172 days in the extreme south at Daru.

5. Wind

Surface winds

Wind direction

In the extreme north the wind directions are predominantly northeasterly whilst in the extreme south they are mainly southwesterly throughout the year. Between these two extremes the winds are seasonal with the northeasterlies prevailing during the dry or winter season and the southwesterlies during the wet or summer season.

Along the coast, especially the Atlantic coast, the wind directions are modified during the afternoon by the sea breeze effect.

Wind speed

Winds in this area are usually light, except on the northwest coast where they exceed 13 knots on 40 to 70% of occasions in most months, and reach a maximum of 90% in June and July.

Winds of over 27 knots are experienced on some 2 to 6% of occasions from February to July on the northwest coast, but elsewhere they seldom exceed 21 knots, except during squalls.

Strong winds (22 kt or more)

Strong winds are not particularly frequent in this area except along the northern stretches of the coast. At Port Etienne strong winds occur on around 38 days a year, further to the south at Dakar there are 21 days with strong winds but only 12 days a year at Freetown.

Inland they are much less frequent and in the extreme north, at Fort Gouraud, they average only 7 days a year and the frequency for other inland areas would seem to be very similar.

These strong winds normally occur during the months April to August but they can be experienced in any month.

Gales (34 kt or more)

It would seem that gales are very infrequent and even along the northern stretches of the coast gales are only reported on about 4 days a year. In other areas they are even less frequent than this.

Squalls

Squalls, which are known locally as 'tornadoes' are belts of intense storms orientated in a bow shape running approximately north to south and moving westward at about 20 or 30 knots. These line squalls may extend for several hundred miles.

These squalls are particularly frequent at the beginning and end of the wet season. They seem to be more frequent in the east than the west and the average frequency at Gao is 29 days a year decreasing to 8 at Bathurst and 5 at Port Etienne, on the west coast.

Local winds

The Harmattan

This is the local name given to the east to northeast winds which blow during the dry season. They do not affect the extreme south of the area but on the other hand they persist throughout the entire year over the northern districts. This wind is always dry and, especially in the northern areas, is frequently dust-laden. During the daylight hours it tends to be hot but cools off quickly after dark.

Land and sea breezes

Land and sea breezes are very well marked along the coast and for some distance inland. As a rule the sea breeze sets in during the morning and attains its maximum strength during the afternoon but dies off again during the evening. On the stretches of coast which run north - south the sea breeze effect normally tends to back the wind slightly during the afternoon but along the coastal stretches which are exposed to the Southwest Monsoon the winds tend to freshen after the onset of the sea breeze.

The land breeze which blows during the night and very early morning is usually very light and, along the coasts which are exposed to the south-westerlies, it often takes the form of a slight falling off of the wind speed.

Upper winds

The table below gives estimated mean vector winds and standard vector deviations (SVD) for various pressure levels over two places in the area discussed in these Notes.

Pressure level mb	Average height ICAN ft	January			April			July			October		
		Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt
		Fort Gouraud 22°41'N, 12°42'W											
700	9,900	320	08	15	220	08	15	Var	08	13	Var	08	17
500	18,300	320	20	20	270	22	20	Var	08	16	Var	08	15
300	30,100	320	50	30	270	45	26	220	08	18	280	18	23
200	38,600	290	60	28	260	65	28	220	08	22	270	35	28
150	44,600	290	58	27	260	60	27	220	08	18	270	40	23
100	53,100	280	38	20	260	45	22	090	15	17	260	30	18
		Freetown 08°37'N, 13°12'W											
700	9,900	Var	08	08	090	10	09	090	08	12	080	18	12
500	18,300	Var	08	13	120	08	13	080	12	12	120	08	13
300	30,100	260	20	19	260	08	15	090	12	16	090	08	16
200	38,600	260	28	23	260	08	21	090	20	21	220	08	17
150	44,600	270	20	23	260	10	21	110	10	18	220	08	19
100	53,100	260	12	20	Var	08	20	100	15	18	Var	08	16

Jet streams

Jet streams are unlikely to occur over most of the area but the belt of strong westerly winds which exists over Algeria during winter may occasionally extend to the north of this area.

When this happens, winds of over 100 knots, from a westerly direction, may be experienced at heights of between 30,000 and 50,000 feet.

6. Sea and swell

From Spanish Sahara to Guinea, waves are under 5 feet in height on between 67 and 95% of occasions and from 5 to 12 feet on from 10 to 16% in the south and 12 to 30% in the north of the area. Waves of over 20 feet in height have been reported in May, July and November, in which months the maximum frequency of occurrence, 0.8%, occurred in July. From Guinea to the centre of the Liberian coast the waves are predominantly under 5 feet in height but do reach to between

5 and 12 feet on from 8 to 20% of occasions between May and November, inclusive, and on from one to 7% in the remaining months of the year. Reports received indicate that waves over 12 feet in height are rare.

Long stretches of this coast are affected by rollers and, especially south of 10°N, suffer from extensive surf, which is particularly heavy from May to October. The sea breeze may raise choppy seas anywhere along the coast during the afternoon.

7. Cloud

Cloud amount

Along the west coast, at Port Etienne, the mean cloud amounts are some 2 to 3 eighths at any time of the year but further to the south, at Dakar, they are around 3 to 4 eighths during the dry season and 5 to 6 eighths in the wet season.

Much further southwards, along the Guinea and Sierra Leone coasts, the mean cloud amounts are 2 to 3 eighths in the dry season and 6 to 7 eighths during the wet season.

Inland the average amount of cloud is some 2 to 4 eighths in the dry season and 5 to 6 eighths in the wet season over most of the area but, well inland, over the desert the average is only 2 to 3 eighths at any time of the year.

Cloud type

On the southern coast during the dry season, and elsewhere at any time of the year, the cloud is mainly fair weather cumulus but low stratus or lifted fog occur at times; patches of medium cloud are also experienced.

On the southern coast during the wet season, cumulus and cumulonimbus are a prominent feature and, at the height of the rainy season, extensive stratiform cloud, in several layers, with embedded cumulonimbus is experienced.

In the extreme north there is little cloud at any season, except small amounts of fair weather cumulus.

Cloud height

On the northwest coast the cloud base is normally between 2,000 and 4,000 feet, but, occasionally, it falls to about 1,000 feet during the wet season.

On the south coast the cloud is often between 1,000 and 2,000 feet, especially in the wet season, but it sometimes falls lower than this.

Inland, the cloud base is generally between 2,000 and 4,000 feet above ground level but occasionally it falls below 1,000 feet during squalls or showers.

Very low cloud (base below 1,000 ft)

Little or no information is available for the northwest coast but very low cloud probably occurs from time to time, although it is most likely infrequent.

On the west coast, at Bathurst, very low cloud, at 0200 local time, occurs on about 20% of occasions in May, June and October and 40 to 50% from July to September; at 1400 hours it averages 10 to 15% from July to September but in other months very low cloud occurs on less than 5% of occasions.

At Freetown, at 0500 local time, very low cloud is reported in 15 to 30% of observations during the period June to October and 5 to 10% in November, December and May. At 1100 local time the frequency is from 10 to 15% in June and September and 25 to 30% in July and August. In other months the frequency is normally less than 5% of occasions.

Inland, data are sparse but very low cloud undoubtedly occurs from time to time during heavy rain or where patches of low stratus form at night and in the early morning during the dry season.

8. Visibility

Over the northern districts there is a general tendency for the visibility to be moderate, or poor, sometimes very poor indeed, during the Harmattan season but it is normally good or very good, except during heavy precipitation, in the wet season. Visibilities are usually at their worst during the early morning.

In western coastal areas the visibility is poor (less than 2½ miles) on some 15 to 20% of occasions in February and March, at both 0700 and 2100 hours, but only 2 to 5% at other times or in other months.

On the Guinea coast, poor visibility is infrequent but 20 miles or so inland it is usually to be found on some 20 to 40% of occasions at 0900 hours between December and March but in some districts the frequency is sometimes as high as 65%; this frequency includes 15 to 30% of occasions of fog, i.e. when the visibility is less than 1,100 yards.

In some regions fog is reported in over 40% of observations during the worst months. The visibility normally improves by noon and in the afternoon in most areas the visibility is poor on only 2 to 5% of occasions, although in some districts the frequency of poor visibility remains around 25%. In other months poor visibility occurs in 15% or less of observations and, in fact, in most places the frequency is less than 5%.

Inland, hill fog is quite frequent during the rainy season and radiation fog or poor visibility are a common phenomena during the dry season in the valleys or other low lying areas. In the worst months there are up to 30% of reports of instances of poor visibility including 10 to 15% of cases of fog in some localities.

Towards the end of the dry season the visibility is sometimes reduced by the smoke from forest or bush fires.

9. Propagation of radar over sea and coastal areas

Radar ranges are average or above for most of the time. Above average conditions predominate during the months December to February. Above average ranges are to be expected when warm dry air currents blow off the land over the sea.

10. Summary of the main features of the climate

(a) The climate varies widely from that of the hot desert of the north to the Equatorial rain belt of the south. Temperatures range from mean monthly maxima in July of 31 to 35°C on the coast to 44 to 47°C inland and mean monthly minima in January from 22 to 7°C on the coast and 10 to 5°C further inland. Relative humidities are generally high along the coast but they tend to be much lower inland, especially during the afternoon.

(b) Precipitation amounts vary from an annual average of over 160 inches in parts of the coast of Guinea to about one inch in the desert regions of the north. The rainfall is seasonal in character.

(c) The winds are mainly northeasterly throughout the year in the northern territories, southwesterly in the extreme south but seasonal in the more central areas.

(d) Visibility is often moderate or poor in the dry season, especially in the early morning. In the rainy season it is usually good except during heavy rain.

(e) Severe line-squalls, known locally as 'tornadoes' occur at times, mainly at the beginning and end of the rainy season.

September 1968

II METEOROLOGICAL NOTES

West Africa - Part 2 (covering Ghana and Nigeria)

Acknowledgement:- These Notes have been prepared by the Meteorological Office in conjunction with the Naval Weather Service.

1. General

The area covered by these Notes extends from the Sahara Desert in the north to the Gulf of Guinea in the south and from the eastern border of Sierra Leone to the western border of the Cameroons. The climate varies from the hot, wet conditions of the Guinea coast to the very hot, dry weather of the Sahara.

The table below gives a list of places mentioned in these Notes.

Station	Latitude	Longitude	Height ft
Bilma	18°39'N	13°23'E	1,171
Zinder	13°48'N	08°59'E	1,676
Niamey	13°30'N	02°07'E	709
Kano	12°02'N	08°32'E	1,549
Maiduguri	11°47'N	13°11'E	1,185
Ibadan	07°26'N	03°54'E	699
Kumasi	06°43'N	01°36'W	942
Lagos	06°35'N	03°20'E	132
Enugu	06°27'N	07°29'E	745
Monrovia	06°18'N	10°45'W	75
Accra	05°36'N	00°10'W	214
Calabar	04°58'N	08°21'E	206
Takoradi	04°53'N	01°46'W	15
Victoria	04°01'N	09°12'E	10

2. Seasonal weather and weather changes

In the area to the north of 13°N there are two main seasons as follows:-

Winter (November to April)

During this season the winds are mainly northeasterly (the Harmattan), cloud and precipitation amounts are generally small but visibility is often reduced by dust haze. The temperatures of this region are at their minimum during this season.

Summer (May to October)

In summer the surface winds in the extreme north remain northeasterly but in the southern districts they are southwesterly. The cloud and precipitation amounts are at their maximum but in the extreme north there is really little change from the winter conditions. In the extreme north the temperatures are at their highest in June and July but in the south the hottest month is normally May. The visibility is usually very good but it is reduced in the southern districts during any heavy precipitation.

In the area to the south of 13°N there are also two clear cut seasons which are:-

The dry season (October to April in the north and December to February in the south)

It is the least cloudy season at most places and temperatures are normally at their highest towards the end of this dry period. On the coast there is appreciable rainfall even in this season but further inland amounts are generally small. Early morning mist, fog, or low stratus cloud, occur quite often in some districts. Inland the winds are predominantly northeasterly but along the coast and, also, for some miles inland they remain southwesterly.

The wet season (May to September in the north and March to November in the south)

At this time of year cloud amounts are at their maximum and rainfall is considerable, especially in the hilly areas near to the coast. Temperatures along the coast are normally the lowest of the year. Line squalls, which are known locally as 'tornadoes' occur mainly at the beginning and the end of this season. Visibility is normally good over the greater part of the area except when rainfall is very heavy or when cloud covers the hills. The winds are predominantly southwesterly throughout the entire season.

A summary of the main features of the climate is given at the end of these Notes.

3. Temperature and humidity

Temperatures

Along the coastal zone there is little month to month variation in average temperatures. The mean monthly temperature in coastal areas is normally between 24 and 28°C. Inland the variation is somewhat greater with the January temperatures being around 24°C but those of May are some 10°C higher.

Along the coast, in January, the mean daily maxima are between 30 and 33°C and the minima between 23 and 21°C. Extreme temperatures as high as 37°C and as low as 10°C have been recorded. In the hottest months, which are normally March to May, the mean daily maximum temperatures are about 31 to 33°C, the mean daily minima about 25 to 21°C but extreme temperatures of 41 and 15°C have occurred.

Inland, in January, the average daily maximum temperatures are about 32°C whilst the minima are around 20°C in the south and between 13 and 7°C in the north. Temperatures as high as 45°C or as low as -3°C have been recorded. In the hottest months, which are usually March to May in the southern districts but June to August in the north, the average daily maximum temperatures are around 41 to 43°C, average daily minima 22 to 18°C and extreme temperatures of 54 and 10°C have been experienced.

The height of the 0°C isotherm is some 14,000 to 15,000 feet throughout the year.

The tables below give average daily maximum and minimum temperatures for a number of places in this part of Africa.

Average Daily Maximum Temperatures (°C)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Bilma	9	27	30	35	38	42	43	42	40	41	38	33	27	36
Niamey	10	34	37	41	42	41	38	34	32	34	38	38	34	37
Kano	23	30	33	37	38	37	34	31	29	31	34	33	31	33
Ibadan	14	33	34	34	33	32	29	28	27	29	30	32	33	31
Lagos	32	31	32	32	32	31	29	28	28	28	29	31	31	30
Victoria	17-19	30	31	31	31	30	28	27	26	28	29	30	30	29

Average Daily Minimum Temperatures (°C)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Bilma	24	7	9	13	17	21	23	23	23	21	16	11	8	16
Niamey	10	14	17	21	25	27	25	23	23	23	23	18	15	21
Kano	23	13	15	19	24	24	23	22	21	21	19	16	13	19
Ibadan	14	21	22	23	23	22	22	21	21	22	22	22	21	22
Lagos	32	23	25	26	25	24	23	23	23	23	23	24	24	24
Victoria	17-19	21	22	23	23	23	22	22	22	22	22	22	22	22

Wet bulb temperature

A combination of high humidity and high temperature make conditions very oppressive. Continuous physical exertion, in still air conditions, is considered undesirable if not impossible when the wet bulb temperature exceeds about 26°C.

This wet bulb temperature is frequently exceeded at some time of the day along the coastal belt during the months May, November and December but less often in the remaining months.

Inland these high wet bulb temperatures are infrequent and in the drier areas of the extreme north they are almost certainly unknown.

Relative humidity

The coastal zone of this part of Africa is uncomfortably humid, especially in the morning when the relative humidity is normally in excess of 85%. There is some amelioration during the afternoon in the dry season, when humidities fall to about 65%, but in the wet season the air normally remains moist throughout the entire day.

Inland, conditions are usually very much better and, in fact, in the extreme north of the area conditions are very dry indeed. In most central and southern districts, during the dry season, the relative humidity in the morning is usually around 40% but it decreases to less than 20% by the afternoon whilst in the short wet season the averages are between 75 and 90% in the morning and 55 to 70% in the afternoon.

4. Precipitation

Amount

Precipitation amounts, on and near the coast, vary considerably with location from an average of about 28 inches a year at Accra increasing along the coast to 72 inches at Lagos and 159 inches at Victoria. It is probably as much as 200 inches near to the border of the Cameroons.

Inland the precipitation amounts average about 45 to 50 inches in the south, decreasing gradually northwards to 34 inches at Kano, 22 at Niamey and Zinder and less than one inch at Bilma.

Number of days with a trace or more

The number of days with measurable precipitation varies from around 200 a year in the wetter parts of the coastal zone to 5 or less in the extreme north.

Heavy falls in 24 hours

Heavy falls in 24 hours occur at times, especially in coastal districts. Falls of over 12 inches in a day have occurred at Victoria, Enugu, Monrovia (over 14 inches on a day in July) but further inland the maximum falls are of the order of 4 or 5 inches in a day and in the extreme north the heaviest recorded 24 hour falls are about 1.5 inches.

The table below gives average monthly precipitation amounts for 7 places in the area.

Average Monthly Precipitation (inches)

Station	Period yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Bilma	27	*	0	0	*	*	*	0.1	0.4	0.2	0.1	0	*	0.8
Niamey	19	0	*	*	0.3	1.4	3.4	5.4	8.1	3.5	0.8	*	0	22.9
Kano	39	*	*	0.1	0.4	2.7	4.6	8.1	12.2	5.6	0.5	*	0	34.2
Ibadan	56-57	0.3	0.9	3.5	5.3	5.9	7.4	6.1	3.3	6.9	6.3	1.8	0.4	48.1
Lagos	47	1.1	1.8	4.0	5.9	10.6	18.1	11.0	2.5	5.5	8.1	2.7	1.0	72.3
Accra	65	0.6	1.3	2.2	3.2	5.6	7.0	1.8	0.6	1.4	2.5	1.4	0.9	28.5
Victoria	28	1.7	2.7	6.1	8.5	13.1	25.0	38.2	31.2	16.7	10.0	4.1	1.3	158.6

*less than 0.1

Snow and snow lying

Snow is virtually unknown in this part of Africa.

Hail

Hail occurs at times, usually in association with thunderstorms. Hail is infrequent over the greater part of the area and in most districts it averages less than one day a year.

Thunderstorms

Thunderstorms are quite frequent along the coast, especially in eastern Nigeria. There are about 240 days a year with thunder heard at Calabar, 110 at Takoradi, 108 at Accra and 130 at Lagos. Inland, thunder is heard on 60 days a year at Kano, 80 at Maiduguri, 70 at Niamey and 57 at Zinder.

5. Winds

Surface winds

Wind direction

In the north the northeasterly Harmattan persists throughout the entire year whilst along the coast the Southwest Monsoon is the predominant wind.

In the more central districts, however, the wind directions are seasonal with northeasterly winds prevailing during the dry season and southwesterlies in the wet season.

Wind speed

Wind speeds are generally light with only short periods when they are moderate or fresh. During squalls, however, the winds may well become fresh or strong though usually for relatively short periods only.

Strong winds (22 kt or more)

Over the best part of the year strong winds are very infrequent. In most districts they are reported on about 15 days a year and, although they can occur in any month, they are most often experienced between March and May.

Gales (34 kt or more)

Gales are very infrequent in this area and in practically all districts gales occur on less than 5 days a year and at some places the average frequency is less than one.

Squalls

Line squalls, which are known locally as 'tornadoes' are belts of intense storms orientated in a bow shape running approximately north and south and moving westward at about 20 or 30 knots. The belt of thunderstorms may extend for several hundred miles.

These squalls occur most frequently at the beginning and end of the wet season. In general, they are reported on about 14 days a year at Calabar, 6 at Maiduguri, 42 at Kano, 27 at Lagos and 28 at Zinder.

Local winds

The Harmattan

This is the local name for the east to northeast wind which blows in the dry season. It is hot during the day but relatively cool at night and is exceptionally dry and often dust-laden, especially in the more arid areas of the north.

Land and sea breezes

Land and sea breezes are well marked on the coast. As a rule the sea breeze sets in during the morning and increases in speed to a maximum in the afternoon, dying away again during the evening.

The land breeze, which is the lighter of the two, sets in about midnight and blows until dawn but along this coast where the Southwest Monsoon is prevalent the land breeze effect often takes the form of a lessening of the onshore wind speed during the hours of darkness.

Upper winds

The table below gives estimated mean vector winds and standard vector deviations (SVD) for various pressure levels over two places in this part of Africa.

Pressure level mb	Average height ICAN ft	January			April			July			October		
		Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt	Dir Deg	Speed kt	SVD kt
		Bilma 18°39'N, 13°23'E											
700	9,900	250	12	13	Var	08	15	070	12	12	090	10	14
500	18,300	250	35	19	270	18	18	040	10	12	090	08	14
300	30,100	260	50	27	270	40	23	080	18	13	250	18	18
200	38,600	250	60	28	270	55	25	090	22	18	270	25	20
150	44,600	250	50	25	270	50	25	090	22	18	250	30	22
100	53,100	250	40	19	260	38	18	090	35	21	230	20	15
		Takoradi 04°53'N, 01°46'W											
700	9,900	090	10	09	080	20	10	080	08	12	090	20	13
500	18,300	090	10	13	080	10	12	080	08	12	090	08	13
300	30,100	Var	08	17	110	08	14	090	20	15	090	08	14
200	38,600	Var	10	21	180	08	18	090	30	21	Var	10	18
150	44,600	220	10	24	Var	08	18	120	20	18	170	08	20
100	53,100	250	10	20	100	08	17	100	19	18	110	08	16

Jet streams

Over the greater part of the area, jet streams are an unlikely occurrence but the belt of strong westerly winds which exists over Algeria during the winter may, occasionally, extend southwards and affect the area discussed in these Notes. On such occasions, winds of over 100 knots, from a westerly direction, may be experienced at heights of 30,000 to 50,000 feet.

6. Sea and swell

The few observations available indicate that off the coast from eastern

Nigeria to eastern Ghana, waves seldom exceed 5 feet in height and there are no reports of waves over 12 feet high, though some between 5 and 12 feet have been reported in March, July, August and November. From eastern Ghana to the centre of the Liberian coast the waves are still predominantly under 5 feet, but do reach 5 to 12 feet on 8 to 20% of occasions between May and November, inclusive, and on one to 7% in the remaining months of the year. Reports received indicate that waves over 12 feet in height are rare.

Almost the whole of this coast is affected by rollers and suffers from extensive surf which is particularly heavy from May to October. The sea breeze may raise choppy seas anywhere along the coast during the afternoon.

7. Cloud

Cloud amount

Along the coast the mean cloud amounts are normally around 6 or 7 eighths during the wet season but only 4 or 5 eighths in the dry months. Inland, in the extreme north the average cloud amounts are usually some 2 eighths or less at any time of the year but further to the south the averages are some 3 to 4 eighths in the dry season and 4 to 6 eighths in the remaining months.

Over the coast, and also the more southern areas, there is a definite diurnal variation in the amount of cloud; in the early morning there is a higher frequency of occasions of no cloud or of 8 eighths cloud but during the day cloud amounts are between 3 and 7 eighths on about 75% of occasions, irrespective of time of year. Over the desert regions of the extreme north, however, 8 eighths cover is very infrequent and skies are cloudless on about 40% of occasions with very little diurnal change.

Cloud type

Over the larger part of the area during the dry season, and at any time of the year in the extreme north, fair weather cumulus is undoubtedly the predominant cloud but patches of stratiform cloud, at any height, are not unknown.

In any season along the coast, and during the wet season in central and southern inland districts, cumulus and cumulonimbus clouds are prevalent and they are frequently embedded in thick layered cloud. Cumulonimbus may extend to heights of 35,000 feet or more.

Cloud base

On the coast the cloud base is generally between 1,000 and 2,000 feet above ground level with the clouds normally at their lowest during the wet period. Further inland, the cloud base is somewhat higher and usually between 2,000 and 4,000 feet above the ground, although during heavy rain it may fall to below 1,000 feet.

Very low cloud (base below 1,000 ft)

In some coastal areas, during the rainy season, very low cloud averages up to 40% of occasions in the morning whilst in the afternoon the frequency is around 10 to 15%. Very low cloud is infrequent during the dry season.

In most of the inland districts, however, very low cloud is reported on between 2 and 5% of occasions only, even in the worst months, but in some areas of the south, e.g. Kumasi, the frequency is as high as 60 to 80% in the mornings falling during the afternoon to 1 to 5% in the dry season and 5 to 10% in the wet season.

8. Visibility

There is a general tendency for visibility to be moderate or poor and, at times, it may be very poor indeed, during the Harmattan season. The worst visibilities are found in the more arid regions of the extreme north. Visibility, in the morning, is less than 2½ miles on some 20 to 40% of occasions, from December to February at Ibadan and on some 10 to 20% at Kano and Maiduguri. At Ibadan the visibility improves in the afternoon, but at Kano and Maiduguri there is little diurnal variation.

In some coastal districts, poor visibility is reported on 40 to 70% of occasions in the early morning during the months December to February but in the afternoon the frequency is only about 5 to 10%. In the wet season, however, the prevailing southwesterlies tend to improve the visibility considerably and it is seldom poor except when it is reduced by heavy rain or by cloud enveloping the high ground.

At the end of the dry season, smoke from bush fires may occasionally reduce the visibility sharply.

9. Propagation of radar over sea and coastal areas

Radar ranges are average or above average for most of the time. Above average conditions predominate during the months December to February. Above average ranges are to be expected when warm dry air currents blow off the land over the sea.

10. Summary of the main features of the climate

(a) The climate varies from that of the hot and humid coastal belt to the very hot, dry conditions of the north.

Over the year as a whole the mean monthly temperatures range from a maxima of 38 to 44°C inland and about 32°C on the coast to a minima of about 10°C inland and 18°C along the coast.

The relative humidity is usually high along the coast but further inland it is low, especially during the afternoon.

(b) Precipitation amounts range from an annual value of 150 to 200 inches in parts of Eastern Nigeria to less than one inch in the extreme north. The precipitation is largely seasonal in character.

(c) Winds are mainly northeasterly in the dry season and southwesterly in the wet season. On the coast the northeasterlies seldom become well established whilst the southwesterlies are almost unknown in the extreme north.

(d) Visibility is often moderate or poor in the dry season, especially in the mornings. In the rainy season it is usually good except in heavy precipitation.

(e) Severe line-squalls, which are known locally as 'tornadoes', occur occasionally, mainly at the beginning and end of the dry season.

September 1968

GAMBIA, GHANA, NIGERIA AND SIERRA LEONE

III. GENERAL INDEX OF AIRFIELDS

ADIEMBA	GHANA
AFIENYA	"
AKOSOMBO	"
AKUSE	"
ALABAKASIO	"
AMUA	NIGERIA
AWOMAMA	"
AZARE	"
BATHURST/YUMDUM	GAMBIA
BAUCHI	NIGERIA
BELI	"
BENIN CITY	"
BEESE	"
BETE	"
BIDA	"
BIRMIM KEBBI	"
BIU	"
BO	SIERRA LEONE
BOAJIBU	" "
BOLE	GHANA
BONTHE	SIERRA LEONE
BUI GORGE	GHANA
BUKWIUM	NIGERIA
BUNDASE	GHANA
BURSALI	NIGERIA
BUSSA	"
CALABAR	"
CROSS RIVER MILLS/CALABAR	"
DAKINGARI	"
DARU	SIERRA LEONE
ENUGU	NIGERIA
ESCRAVOS	"
ESIAMA	GHANA
FILIYA	NIGERIA
FREETOWN (LUNGI)	SIERRA LEONE
FREETOWN (HASTINGS)	" "
GBAMGBATOK	" "
GBOKO	NIGERIA
GEIDAM	"
GOMBAR	"
GOMBE	"
GUMMEL	"
GUSAU	"
HADEJIA	"
HO	GHANA
IBADAN	NIGERIA
IDAH	"
IHIALA	"
IKEJA	SEE LAGOS
ILORIN	NIGERIA
ISOKO	"

JALINGO	NIGERIA
JOS	"
KABBA	"
KADUNA	"
KAINGIWA	"
KAINJI	See WAWA KAINJI
KALTUNGO	NIGERIA
KAMBA	"
KAMBIA	SIERRA LEONE
KANO	NIGERIA
KATSINA	"
KEBBI	"
KEFFI	"
KENEMA	SIERRA LEONE
KETE-KRACHI	GHANA
KIRIKIRI	NIGERIA
KONTAGORA	"
KOTOKA INTERNATIONAL	GHANA
KUMASI	"
KWOI	NIGERIA
LAGOS	"
LOKOJA	"
LUNGI	SEE FREETOWN
MAGBURAKA	SIERRA LEONE
MAIDUGURI	NIGERIA
MAKURDI	"
MARAMPA	SIERRA LEONE
MIANGO	NIGERIA
MIM	GHANA
MINNA	NIGERIA
MUBI	"
NANDOM	GHANA
NAVROMGO	"
N'GURU	NIGERIA
OBOLO	NIGERIA
ODEGI	"
OFUNAMA	"
OLOIBIRI	"
OSHOGBO	"
OWERRI	"
OYI RIVER	"
PATANI DELTA	SEE UZERE
PATEGI	NIGERIA
PORT HARCOURT	"
PORT LOKO	SIERRA LEONE
POTISKUM	NIGERIA
SABON BIRNI	"
SWENDAM	"
SHINKAFE	"
SOKOTO	"
SUNYAHI	GHANA
SURU	NIGERIA
TAKORADI	GHANA
TAKUM	NIGERIA
TAMALE	GHANA
TAMALE (NEW)	"
TONGO	SIERRA LEONE

UBULU	NIGERIA
UGA	"
UGHELLI	"
ULI	"
UZERE/PATANI	"
WA	GHANA
WARRI	NIGERIA
WASUGU	"
WATERLOO	SIERRA LEONE
WAWA/KAINJI	NIGERIA
WUKARI	"
YAU	"
YELWA	"
YENDI	GHANA
YENGEMA	SIERRA LEONE
YOLA	NIGERIA
YUNDUM	SEE BATHURST/YUNDUM
ZARIA	NIGERIA
ZURU	"

AL.1

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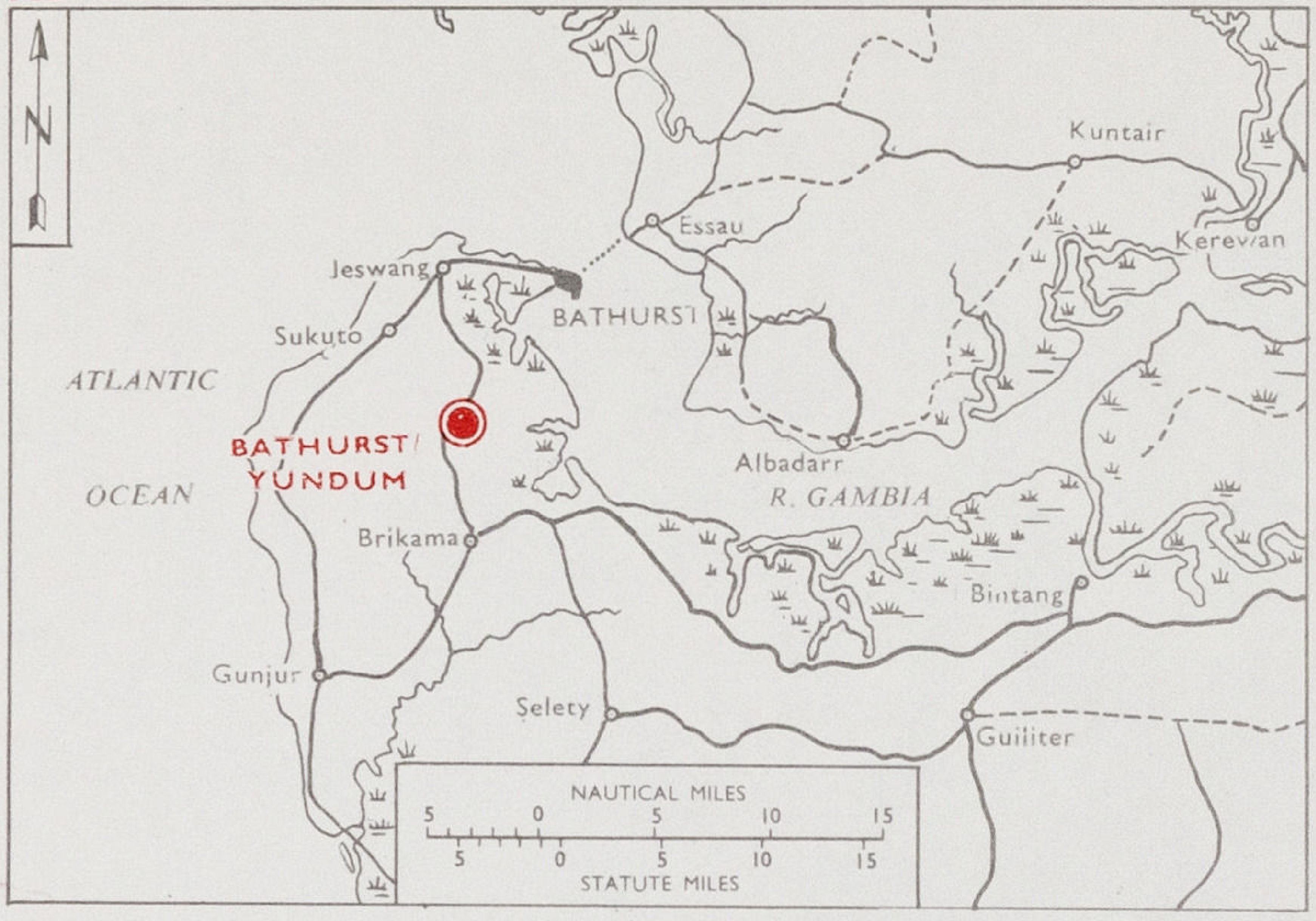
IV. GAMBIA

GAMBIA

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
BATHURST/YUNDUM (0697-8051)	See Information Sheet and Plan			

AL. 1



BATHURST/YUNDUM

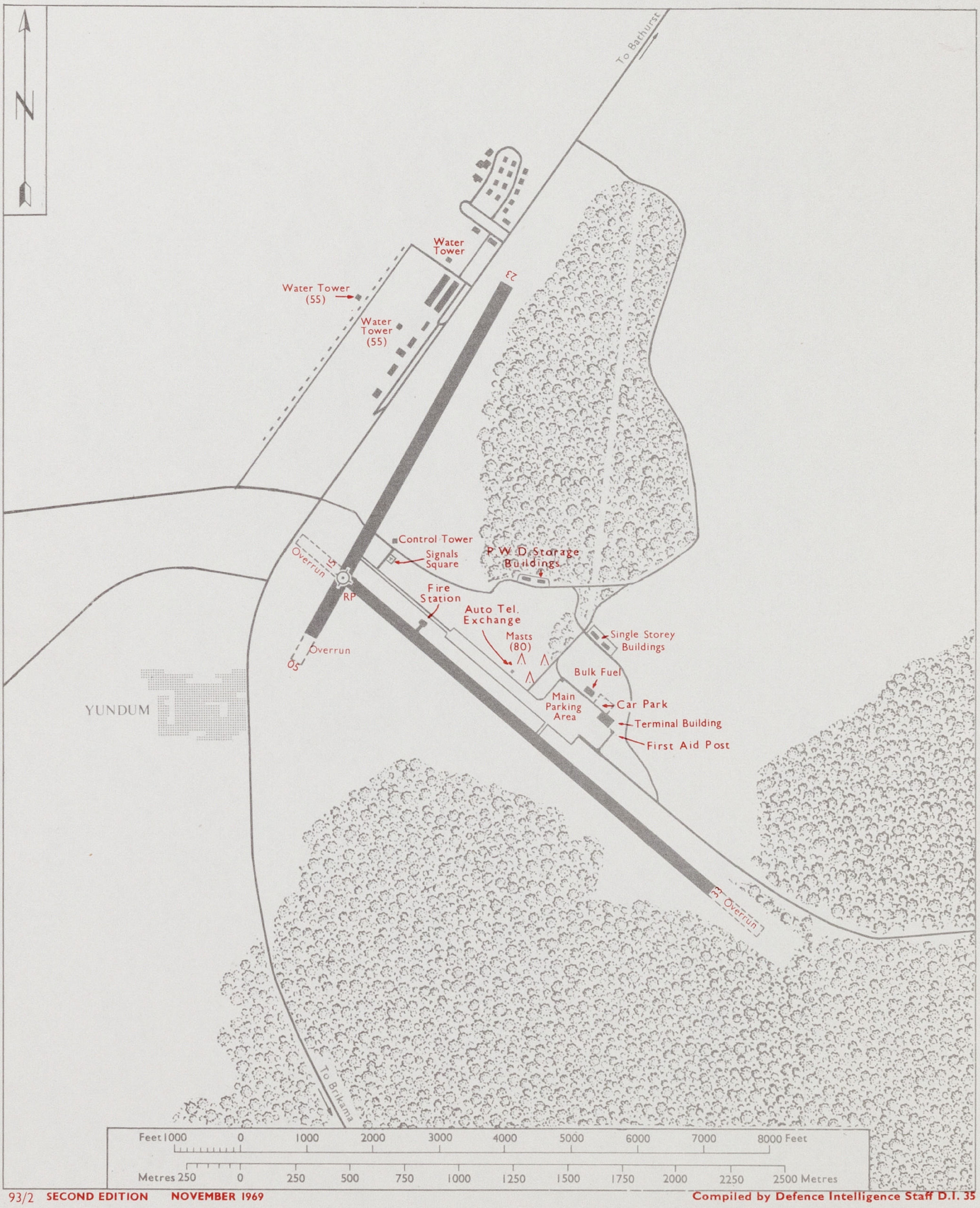
GAMBIA

13° 21′ N.
16° 40′ W.

ELEVATION 88 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL.........(100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



93/2 SECOND EDITION NOVEMBER 1969 Compiled by Defence Intelligence Staff D.I. 35

UNCLASSIFIED **ISSUE DATE:** September 1968

COUNTRY	**GAMBIA**	**BATHURST/YUNDUM**
MAP REFERENCES	• G504 (1:250,000) Edition 1 AMS Sheet ND 28-9	13^0 21' N 16^0 40' W **ELEV:** 88 ft
WAC/RAF CHART		**GRID REF:**

LANDMARKS AND SURROUNDING COUNTRY

7.5 nm SW of Bathurst and 5 nm N of Brikama, just E of the Bathurst/Brikama road. Surrounding country, comparatively flat and wooded.

A/F REF. POINT

Junction of runways.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	85		N: 0.2 to 0.7 nm
Masts	up to 147		N: 0.7 nm
Control tower	85		NE: 900 ft
Mast	85		NE: 2,000 ft

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS	ELEV. (FEET)	SLOPE + OR −
NW/SE	$144^0/324^0$	7,300 x 150	Bitmac	LCN 40	R/W 14 (86.45) R/W 32 (87.85)	
NNE/SSW	$223^0/043^0$	6,000 x 150	PSP on laterite base	73,000 AUW		

Additional Information: Runways are extendible. In regular use by BAC 1-11, Viscount and F.27 aircraft. Stopways: 1,000 feet PSP laid on compacted laterite for both runways.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Irregular in shape with two runways.
Off runways, flat sandy surface with patches of grass and scrub, with natural and some artificial drainage.

DAY MARKINGS AND WIND IND.

Runway designation numerals '14' and '32', '04' and '22'. Side, corner and centre line markings on runways. Signals area. Windsock near control tower. Standard ICAO. Series of white arrows lead to threshold markings of respective runways.

TAXI-TRACKS TARMACS AND DISPERSALS

PSP on laterite taxi-track (75 ft wide) leads from near centre of NW/SE runway to main apron (400 x 320 ft) in front of terminal building. Two parking areas (each 340 x 160 ft) on NE side.

•Co-ordinates and Local Position are taken from this sheet

RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	Electric runway and approach lighting withdrawn June 1968. Taxiway and obstruction lights. Apron floodlights. Illuminated "T". Rotating beacon. Gooseneck flares available for night operations.
FUEL STORAGE	Jet fuel and AVGAS available. Underground storage capacity 259,000 gals. Hydrant refuelling. AVTUR 150 g.p.m. AVGAS 45 g.p.m. Bathurst Installation. 5,450 tons AVTUR. Re-supply to airfield 90 minutes by 1,000 gal tanker.
HANGARS WORKSHOPS POWER SUPPLY ETC.	One metal hangar (156 x 113 x 25 ft). Stores buildings. Power House. Fire Fighting and Crash equipment. Cargo handling facilities.
ADMINISTRATIVE BUILDINGS	Administrative buildings. Terminal building. Control tower. Customs facilities. First aid quarters. Hospitals (2) in Bathurst.
DOMESTIC ACCOMMODATION	Hotels (2) in Bathurst (120 beds). Hotel restaurants.
TELE-COMMUNICATIONS	Telephone and telegraph available.
WATER	Adequate supply from boreholes piped to water tower and thence to service points.
AMMUNITION STORAGE	Nil. Vacant buildings available.
DEFENCES	
ACCESS:- ROAD	Access road on W side of airfield connects Bathurst /Brikama tarmac road. Bridge about 3.5 nm from Bathurst, maximum load 7½ tons.
RAIL	None.
WATER	Port facilities at Bathurst.
OPERATORS AND USERS	Gambia Government. International Airlines.
METEOROLOGICAL INFORMATION	Met. Office available. *Prevailing winds:* Northerly. Line squalls occur June to November. *Rainy season:* June to October. *Visibility:* Usually very good. Subject to occasional ground fog from November to June. *Aerodrome reference temperature:* 29°C.
REMARKS	This airfield was constructed by the Royal Air Force in 1942 and used throughout World War II, mainly as a base for Coastal Command reconnaissance aircraft. It also served as a staging post on the Atlantic Ferry route. After the war it lost much of its importance due to the development of YOF airfield at Dakar, and in 1946 it was placed under the control of the Gambian Government for use as a civil field, and has since been regularly used by civil airlines. Work to extend runway 14/32 by 1,300 feet in SE Sector was completed in May 1968. A final length of 8,000 ft is projected. Future plans are also believed to include improved runway lighting and a new tower, terminal and taxi-way installations.

GAMBIA

APPENDIX 'A' - FORMER LANDING GROUNDS AND ALIGHTING AREAS

The following list includes (a) landing grounds previously reported but believed to have been abandoned and no longer usable, and (b) flying-boat alighting areas not in use and with no facilities.

NAME and CO-ORDINATES	LOCAL POSITION	DIMENSIONS AND SURFACE	REMARKS
BATHURST/HALFDIE FBB 13° 26' N 16° 35' W	Just S of Bathurst in Gambia River mouth	30,000 x 9,000 ft	Base closed 1947. Adequate for any size flying-boat
BRIKAMA 13° 17' N 16° 39' W	1 nm N of Brikama, 10 nm SSW of Bathurst	4,800 x 240 ft PSP (1944)	Formerly ELG but now abandoned. Reported u/s 1950
BWIAM 13° 14' N 016° 04' W	1 nm S of Bwiam just N of the Bwiam/Sangajor road	2,700 x 180 ft laterite	Reported under construction March 1969
JESWANG 13° 28' N 16° 40' W	1 nm S of Cape St Mary. 4 nm W of Bathurst (T)	2,259 ft PSP. 3,159 ft laterite	Reported overgrown 1951

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December 1969

AL.1

V. GHANA

GHANA

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
ACCRA	See KOTOKA INTERNATIONAL			
ADIEMBRA 07° 05' N 00° 05' W 600 ft Series G504 1st Ed. AMS Sheet NB-30-4 UTM Grid Ref. TX 910095	93 nm N of Accra. 5 nm SW of Abomasalafue village 4 nm NW of Apiabra 5½ nm S of Obosum river. 1½ nm NE of Adiembra village	N/S (190°/010°M) 900 x 120 ft. Natural surface. Light a/c only. (Beaver and other similar a/c)	None	Landing ground first reported 1965
AFIENYA 05° 50' N 00° 00' E/W 40 ft approx. Series G504 1st Ed. AMS Sheet NB 31-9 UTM Grid Ref. YJ 000712	18 nm NE of Accra A/F and 2 nm NNW of Afienya village, 9 nm NW of Laloi Lagoon	Grassed area - dimensions not known. Reported suitable light aircraft only	Fire and crash equipment	Reported in 1965 as a small military landing ground in use by GAF and National Gliding School
AKOSOMBO 06° 18' N 00° 04' E 800 ft approx GSGS 4695 2nd Ed. Sheet 816	Approx 48 nm NNE of Accra, close to the Volta dam, on E bank of Volta river	NE/SW (240°/060°M) 2,000 x 100 ft. Laterite (To be bitumen sealed at later date). Caribou a/c (28,000 lb AUW)	None	New air strip first reported in 1966. Near President's chalet. Helicopter landing site reported on W bank of dam. Used by BEAVER, OTTER and CARIBOU

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
AKUSE 06° 06' N 000° 05' E 100 ft GSGS 4695 2nd Ed. Sheet 816	35 nm NW of Accra. 6 nm E of Somanya. 2.5 nm S of Volta river	NNE/SSW (200°/020°M) 2,400 ft long. Gravel. In use by helicopters	None	Constructed in WWII for RAF but abandoned 1942. Re-opened 1965 but becoming overgrown in 1968
ALABAKASIO 04° 58' N 02° 27' W Sea level Series G504 2nd Ed. AMS Sheet NB 30-15 UTM Grid Ref. WA 608490	On coast, 1 nm E of Eikwe; 6 nm WNW of Esiama. 44 nm W of Sekondi	NNE/SSW (210°/030°M) 1,200 x 90 ft Grass. Light a/c only	None	Military airstrip first reported 1966. Becoming overgrown in 1968
BOLE 09° 02' N 02° 29' W 800 ft Series G504 2nd Ed. Sheet NC-30-11 UTM Grid Ref. WF 567002	1 nm N of Bole, 3 nm S of Dole. Astride Northern Territory Highway No. 23	NE/SW (234°/054°M) 3,000 ft Laterite NW/SE (135°/315°M) 2,400 ft Laterite Light aircraft only	None	Military landing ground constructed in WWII and abandoned 1942. Reported in use in 1965 but becoming overgrown in 1968.
BUI GORGE 08° 17' N 02° 16' W 660 ft Series G504 2nd Ed. AMS Sheet NC-30-15 UTM Grid Ref. WE 810156	2 nm S of the Black Volta river. 1 nm S of Bui. 16.5 nm NW Kaura (where Highway 23 crosses Black Volta river). 34 nm WNW of Kintampo	E/W (260°/080°) 600 x 120 ft Laterite Light a/c only	None	First reported 1966. Small military airstrip

BUNDASE 05° 54' N 00° 07' E 500 ft (approx) Series G504 1st Ed. Sheet NB 31-9 Grid Ref. YJ 128785	Exact position not known but site approx 6 nm N of Highway 135, 3 nm E of Shai Hills. 25 nm NE of Accra A/F	NE/SW 1,200 ft Gravel Suitable for light a/c	None	Military airstrip – clearance from Accra ATC necessary before use. First reported 1965 but becoming overgrown in 1968
ESIAMA 04° 58' N 02° 22' W 10 ft (approx) Series G504 2nd Ed. Sheet NB 30-15 Grid Ref. WA 722485	2 nm N of Esiama. 2 nm inland from coast. 38 nm W of Sekondi	NE/SW (225°/045°M) 1,200 ft Grass Caribou a/c (28,000 lbs AUW) reported to have used	None	Small military airstrip – first reported 1965 but becoming overgrown in 1968
HO (0816-8023) 06° 37' N 00° 30' E 350 ft GSGS 4695 2nd Ed. Sheet 816	Approx 1.5 nm NE of Ho village. 18 nm E of Volta river. 10 nm W of Togo border. 73 nm NE of Accra A/F	NE/SW (225°/045°M) 1,200 x 70 ft Gravel Otter and Beaver a/c (8,000 lbs AUW)	Emergency fuel available	Small airstrip first reported 1965
KETE-KRACHI (0816-8801) 07° 49' N 00° 02' W 400 ft Series G504 Sheet NB 30-4 Ed. 1	Approximately 130 nm N of Accra. 2½ nm NE of Kete on the N shore of Volta Reservoir	NE/SW (225°/045°) (approx) 3,000 ft Gravel Light a/c only. Beaver, Otter, Caribou	None	Civil strip. Replaces old landing ground now submerged by new Volta Reservoir. Constructed in 1965/66
KOTOKA INT: (0816-8007)	See information sheet and plan			
KUMASI (0816-8010)	See information sheet and plan			

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
MIM (0817-8805) 06° 55' N 02° 34' W 880 ft Series G504 2nd Ed. Sheet NB 30-7 UTM Grid Ref. WC 480648	Approx 58 nm WNW of Kumasi, in the vicinity of Mim village	NNW/SSE (160°/340°M) 5,000 x 100 ft Gravel Reported suitable for Caribou a/c (28,000 lb AUW)	Not known	Private airstrip - Mim Timber Company
NANDOM 10° 50' N 02° 46' W 900 ft Series G504 1st Ed. Sheet NC 30-7 UTM Grid Ref. NP 984620	Approx 50 nm NNW of Wa, in the NW corner of Ghana. 12 nm NNE of Lawra. 6 nm N of Kambo river and 7 nm E of Black Volta river	ENE/WSW (240°/060°M) 1,540 x 60 ft Natural surface. Reported suitable for Caribou a/c (28,000 lbs AUW)	Not known	Small civil airstrip - first reported 1965 - still in use
NAVRONGO (0782-8010) 10° 57' N 01° 05' W 680 ft Series G504 2nd Ed. Sheet NC 30-8 UTM Grid Ref. YH 095094	2.5 nm N of Navrongo just E of the Navrongo/Kabairo main road. 3.5 nm SW of Ghana/Upper Volta border	NW/SE (140°/320°M) 4,500 x 100 ft Compacted laterite. Reported suitable DC 3 aircraft. Unserviceable after heavy rain	Wind indicator. Telephone, telegraph and rest house in Navrongo	Constructed in WWII for RAF and originally included a second strip of 3,300 ft (NE/SW) Little used from WWII to 1965, when it was listed as emergency field by Civil Authorities
SUNYANI (0817-8022) 07° 20' N 02° 20' W 900 ft Series G504 1st Ed. Sheet NB 30-3 UTM Grid Ref. WD 110748	0.5 nm E of Sunyani 0.5 nm E of Bechem/Sunyani/Berekum main road. 23 nm NW of Bechem	N/S (180°/360°M) Reported as 3,100 x 225 ft Laterite Beaver/Otter aircraft (8,000 lbs AUW)	Emergency fuel available	Constructed in WWII but little used. Reported in use by light aircraft

TAKORADI (0816-8011)	See information sheet and plan			
TAMALE (0782 8011)	See Information Sheet			
TAMALE (New) (0782-8041)	See Information Sheet			
WA (0782-8012) 10° 05' N 02° 30' W 1,060 ft Series G504 1st Ed. AMS Sheet NC-30-7	1.5 nm NNW of Wa and 14.5 nm E of the Black Volta river. The Wa/Lawra road crosses the NE/SW strip approx 1,000 ft from SW end	NE/SW (220°/040° M) 4,660 x 100 ft Laterite LCN 10. Suitable DC 3 a/c NW/SE (130°/310°)M) 4,500 x 100 ft Laterite Probably not in use. A/F reported unusable after heavy rain	Wind indicator. Telephone, telegraph and rest house in Wa	Used by RAF in WW II. Occasional use by charter aircraft since the war. classified as emergency field by civil authorities

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SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
YENDI (0782-8013) 09° 25' N 00° 01' W 640 ft Series G 504 Ed.1 Sheet NC-30-12	1 nm south of Yendi immediately E of Yendi/Bunbela road. 49 nm E of Tamale	ENE/WNW (240°/060° M) 4,500 x 100 ft Grass covered gravel. LCN 10. Unserviceable after heavy rain. Extendible	Wind indicator. Telephone, telegraph and rest house in Yendi	Used by RAF in WW II. Little used since war but classified as emergency field by civil authorities in 1965

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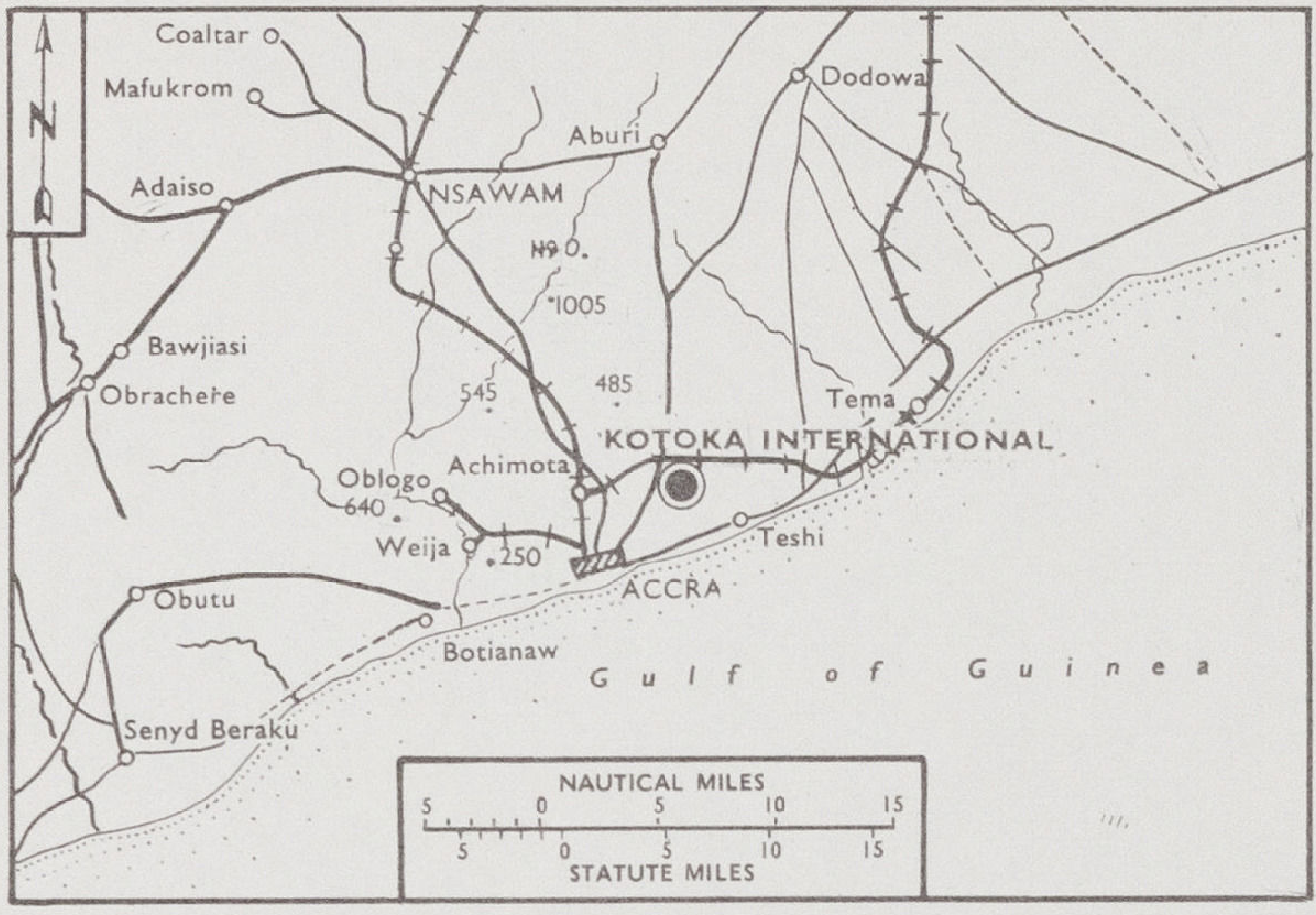


KOTOKA INTERNATIONAL

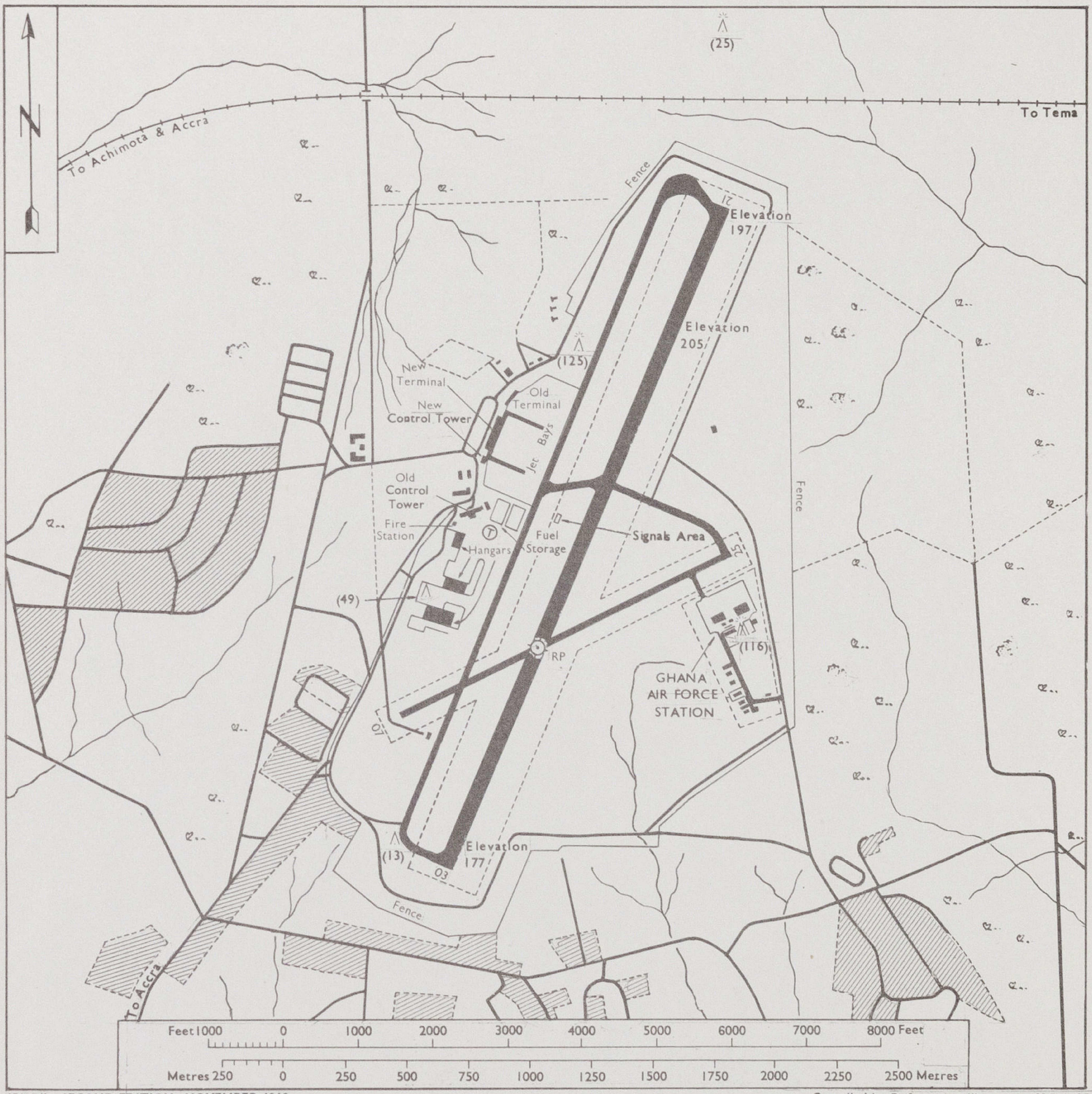
GHANA

05° 36′ N.
00° 10′ W

ELEVATION 205 FT.
AMSL

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



J5/93/1 SECOND EDITION NOVEMBER 1969

Compiled by Defence Intelligence Staff D.I. 35

UNCLASSIFIED

ISSUE DATE: December 1969
AL.1

COUNTRY	**GHANA**	**KOTOKA INT.**
MAP REFERENCES	• Series G504 Sheet NB-30-12 AMS Edition 1	(Accra)
		05^0 36' N 00^0 10' W **ELEV:** 205 ft
WAC/RAF CHART		**GRID REF:**

LANDMARKS AND SURROUNDING COUNTRY

Airfield is situated about 3.5 nm NE of Accra, on the S side of the railway. Undulating scrub covered area.

A/F REF. POINT

Centre of runway.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Mast	125		N: at approx 2,500 ft
Mast	25		NNE: at approx 1 nm
Mast	116		ESE: at approx 2,500 ft
Mast	49		SW: at approx 2,200 ft
Mast		230	SW: at approx 2 nm
Mast		1,475	NW: at approx 8 nm

Hilly country NW of the airfield with heights up to 1,190 ft within 10 nm.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS	ELEV. (FEET)	SLOPE + OR –
NNE/SSW	211^0/031^0	9,600 x 200	Asphalt	LCN 65 (h 20)	197	– 20 ft SSW end
ENE/WSW	253^0/073^0	5,000 x 100	Asphalt	LCN 30 (h 10)		

Additional Information: In regular use by Boeing 707, DC-8 and VC 10 aircraft. Graded shoulders on sides of runway. Overrun 600 ft runway 21. Down draught possible on approach to runway 21. Runway 25/07 for emergency use only; DC-3 aircraft.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

An irregularly shaped area with two asphalt runways. Off runway, grass on silty loam top soil overlying sandy clay. Liable to become soft after heavy rain.

DAY MARKINGS AND WIND IND.

Runway designation numerals "21" and "03". Side, threshold, centre-line and touch-down markings on runway. Taxiway, longitudinal and holding position markings. Signals square. Landing indicator. Windsock on W side of runway.

TAXI-TRACKS TARMACS AND DISPERSALS

Parallel asphalt taxi-track, (75 ft wide) on W side of runway, connecting with both ends and mid point of runway 21/03; also to ENE end of 07/25 runway. Asphalt parking apron (LCN 75) approximately 1,300 x 400 ft on NW side.

•Co-ordinates and Local Position are taken from this sheet

RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	High intensity electric runway lighting and green threshold lights. Red approach lights. Obstruction lights. Blue taxiway lights. Illuminated "T". Floodlights on apron. Flashing beacon alternating green/white every 5 seconds Emergency gooseneck flares.
FUEL STORAGE	Jet fuel 131,700 galls and Avgas 47,500 galls available. Bulk fuel storage capacity Avgas 4 x 12,000 galls. Jet 4 x 12,000 galls. (1963 info). Refuel by hydrants and bowsers. Bulk fuel storage 6 nm to the SW capacity (1965 info):- Avgas 100/130 2,000 tons. Avgas 115/145 1,020 tons. Jet JP1 12,000 tons and Jet JP4 1,000 tons. Resupply by road.
HANGARS WORKSHOPS POWER SUPPLY ETC.	Two steel hangars 164 x 118 ft with door clearances 118 x 32 ft. One steel hangar 128 x 92 ft with door clearances 128 x 25 ft. Two hangars (GAF) on E side. Limited hangar space for visiting aircraft. Workshops for maintenance and repairs. Stores buildings. Power supply (220 volt) from Accra. Emergency generator at airfield. Fire fighting equipment. Crash equipment (1 crash tender, 3 dual water/foam tenders, 1 rescue tender). Cargo handling facilities.
ADMINISTRATIVE BUILDINGS	Administrative and office buildings. Terminal building. Control tower. Customs and immigration services. First aid facilities at airfield. Hospital at Accra.
DOMESTIC ACCOMMODATION	Hotel accommodation for 50 persons at airfield. Restaurant. Hotel accommodation at Accra.
TELE-COMMUNICATIONS	Telephone and telegraph available.
WATER	Unlimited, mains supply.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	Two lane tarmac road from Accra to the airfield.
RAIL	Standard 3' 6" gauge line from Accra to Takoradi via Kumasi. Nearest station Accra.
WATER	Port facilities at Accra. Loading and unloading by lighters from seagoing ships anchored off-shore. Jetty with 10 to 12 ft of water alongside.
OPERATORS AND USERS	Department of Civil Aviation. International and domestic airlines. Ghana Air Force.
METEOROLOGICAL INFORMATION	Met. station at airfield. *Prevailing wind:* SSW. *Rainy seasons:* April to July and October/November. *Visibility:* Generally good. Fog rare. *Aerodrome reference temperature:* 29°C.
REMARKS	Developed during World War II when under the control of the Royal Air Force and United States Air Force and used mainly as a staging and refuelling point on the Atlantic Ferry route. In 1946 control passed to the local government and since then various improvements have been carried out, and the airfield has been in regular use by international airlines. During early 1959 a development plan for the complete modernisation of the airfield was approved and by the beginning of 1961 a new runway, parallel to, and E of the former NNE/SSW runway was completed. A new terminal building and Control Tower was completed in 1969.

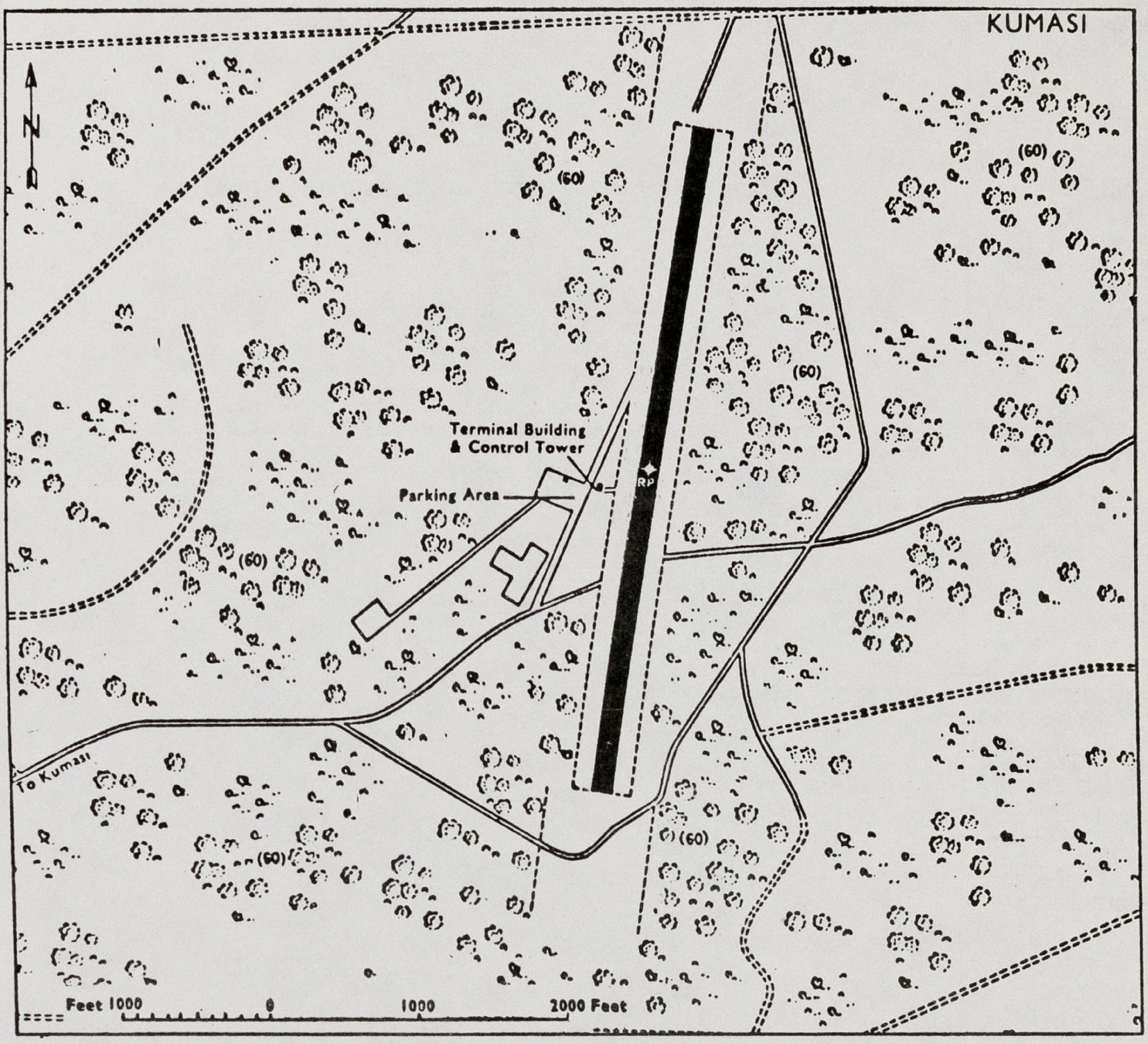
ISSUE DATE: December 1969
AL.1

COUNTRY	GHANA	KUMASI
MAP REFERENCES	•Series G504 2nd Edition AMS Sheet NB 30-7	**BE:** 06^{0} 43' N 01^{0} 35' W **ELEV:** 942 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	2.5 nm NE of Kumasi, on the E side of Kumasi/Mampong road. Kumasi/Accra railway lies about 3 nm S 110 nm N of Takoradi. Surrounding country thick bush and forest with low hills to NE.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Mast	80		.75 nm to SW
Control Tower			W of, and adjacent to, centre of runway
Mast		1,170	3.5 nm to S

Surrounded by high trees but approaches cleared.



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR -
NNE/SSW	$204^{0}/024^{0}$	4,500 x 150	* Bitmac	LCN 12 (h 6)		

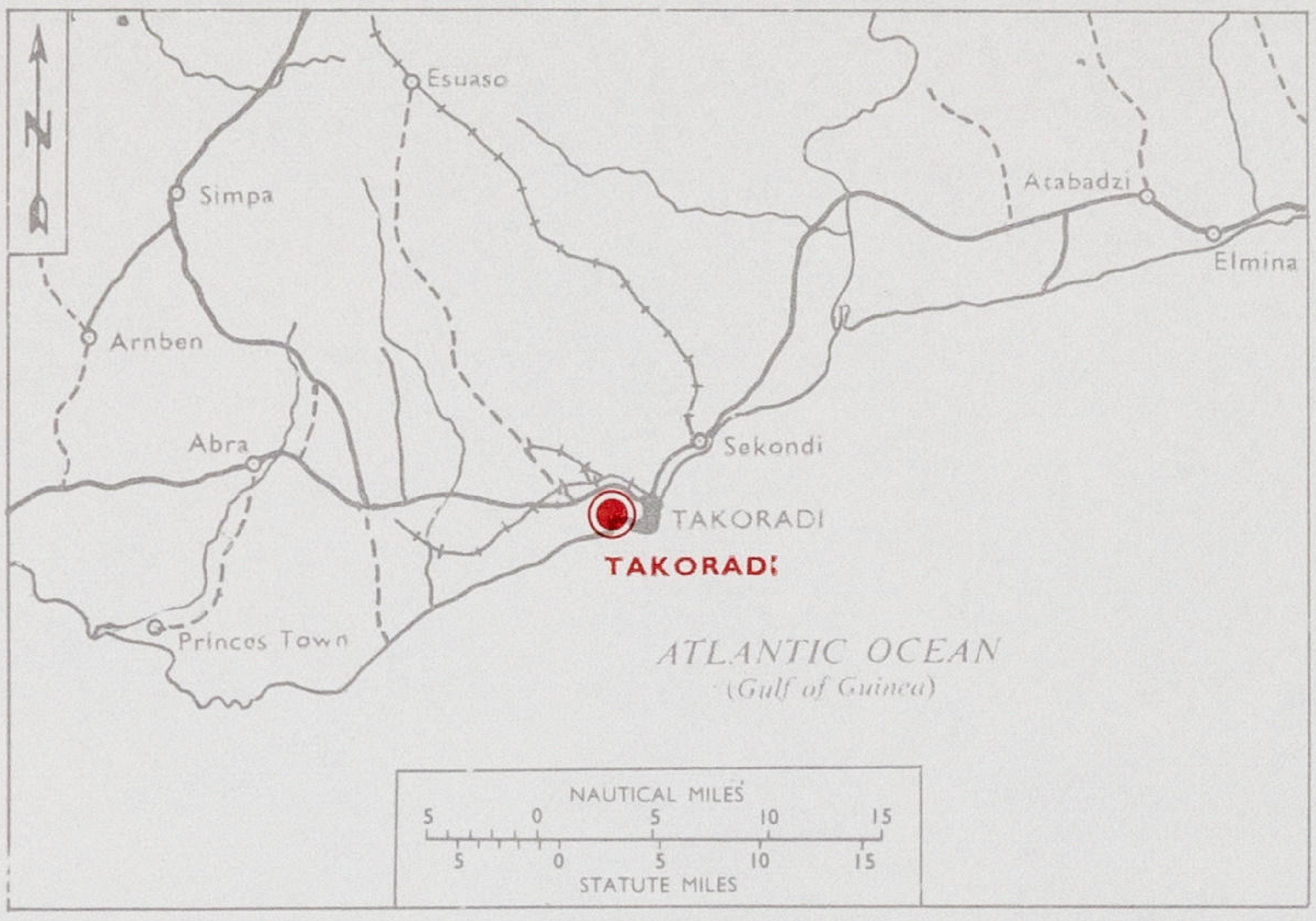
Additional information: Grass shoulders on each side runway and cleared runway ends. Used by F-27 aircraft.

* In May 1969 the runway was reported to be deteriorating.

•Co-ordinates and Local Position are taken from this sheet

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Roughly rectangular in shape, 4,500 x 495 ft with bituminised macadam runway. Off runway - grassed laterite. Runway and field area reportedly well drained.
DAY MARKINGS AND WIND IND.	Runway designation numerals '02' and '20'. Side, threshold centre line and touch down markings on runway. Taxiway centre line and holding points marked. Wind indicator; signals square; identification sign 'KUMASI'.
TAXI-TRACKS TARMACS AND DISPERSALS	Short, 75 ft wide bitmac taxiway from runway to small apron (LCN 12) near control tower.
RADIO AIDS	R/T and/or W/T contact. Homing facility.
NIGHT LANDING	Gooseneck flares for emergency. Obstruction lighting.
FUEL STORAGE	Avgas available. Storage tank 1,500 gals. Hydrant refuelling.
HANGARS WORKSHOPS POWER SUPPLY ETC.	Terminal building/control tower. Limited cargo handling. Fire, crash and first aid equipment (hospital in Kumasi town,. No servicing available. Power supply probably from Kumasi town.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Telephone and telegraph.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Rest house in Kumasi town. Water available.
AMMUNITION STORAGE	
ACCESS:- ROAD	Good 22 ft tarmac road to Kumasi.
RAIL	Accra/Kumasi/Takoradi railway - 3 nm.
WATER	Nearest port Takoradi (110 nm).
OPERATORS AND USERS	Department of Civil Aviation. Ghana Airways.
METEOROLOGICAL INFORMATION	Met. Office on base. *Prevailing wind:* SW March to November, NE December-February. *Rainy season:* April-October. *Airfield reference temperature:* 29°C. *Visibility:* early morning fog prevalent, especially October-February.
REMARKS	From 1941 Kumasi was used by RAF as a staging post. In 1944 it was handed over to civil authorities and various improvements followed, including resurfacing and extension of runway. The airfield is now in regular use by Ghana Airways.

UNCLASSIFIED



TAKORADI

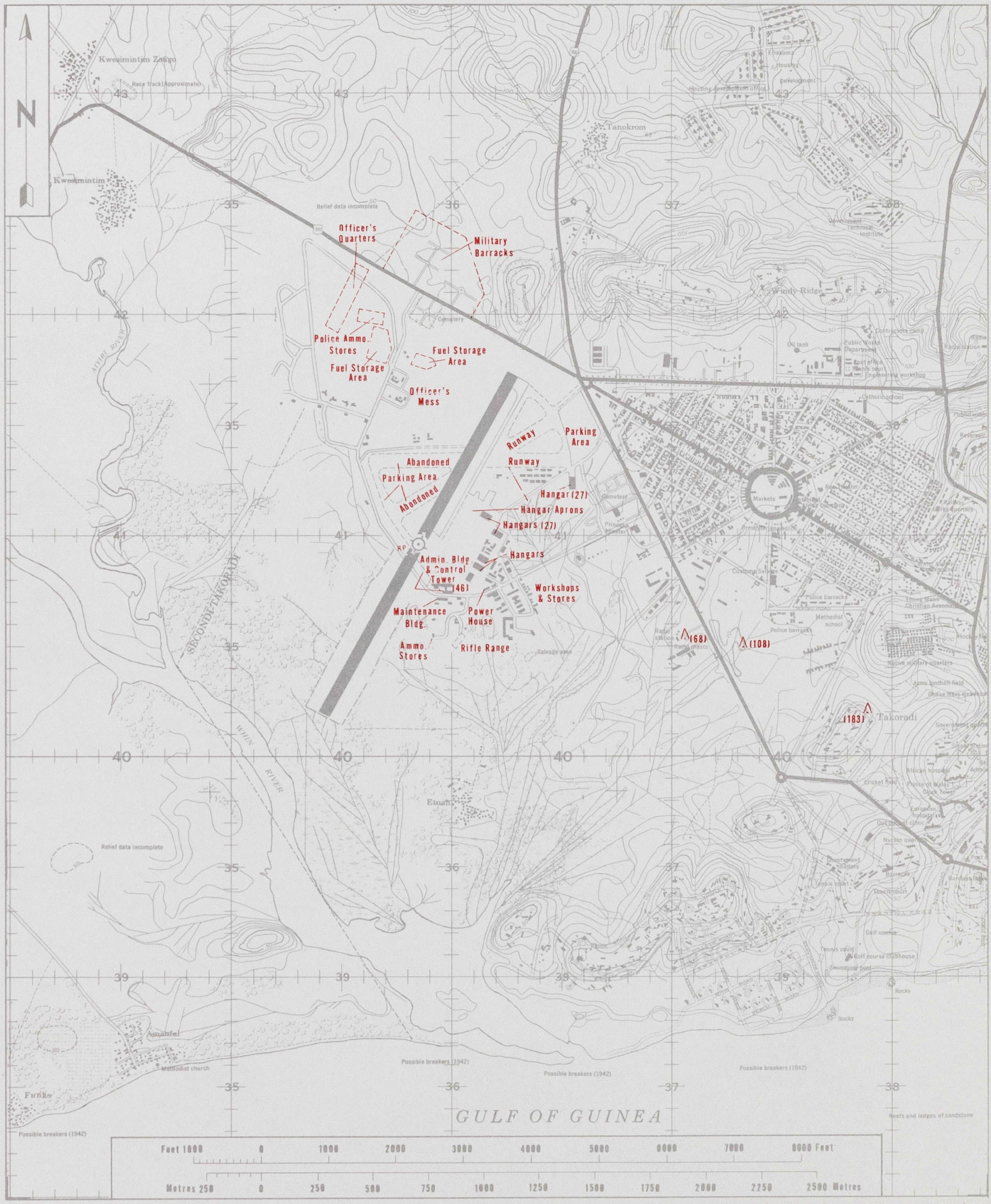
GHANA

04° 54′ N.
01° 46′ W.

ELEVATION 22 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



93/15 FIRST EDITION SEPTEMBER 1968

Compiled by Defence Intelligence Staff D.I. 35

UNCLASSIFIED

ISSUE DATE: December 1969
AL.1

COUNTRY	**GHANA**	**TAKORADI**
MAP REFERENCES	• G504 (1:250,000) Sheet NB 30-15 Edition 2	04° 54' N 01° 46' W **ELEV:** 21 ft
WAC/RAF CHART		**GRID REF:**

LANDMARKS AND SURROUNDING COUNTRY

0.9 nm W of Takoradi town, between Takoradi/Axim road and estuary of River Hwini
Surrounding country, bush covered to N; sea to S.

A/F REF. POINT

Centre of runway.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Hill	85	110	NE: at approx 4,500 ft
Hangar	27		NE: at approx 3,000 ft
Masts	200	225	ENE: at approx 1.5 nm
Hangars	27		E: at approx 900 ft
Hangar	27		NE: at approx 3,000 ft
Masts	60	25	ESE: at approx 3,900 ft
Masts	100	125	ESE: at approx 6,300 ft
Masts	175	200	ESE: at approx 8,100 ft
Control tower	46		SSE: at approx 900 ft
Tower		150	SSE: at approx 1.3 nm
Mast	46		S: at approx 1,350 ft

Overhead cable (45 ft) along roads at N and E boundaries of airfield.
Scattered trees on all sides.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS	ELEV. (FEET)	SLOPE + OR −
NNE/SSW	222°/042°	5,745 x 150	* Asphalt	LCN 12 (h 8)	21	− 4 SSW end

Additional information: In regular use by F-27 aircraft. 174 ft wide shoulders on both sides of runway. The former ENE/WSW and E/W runways are no longer in use. See "Remarks".
* Due to the poor condition of the runway the airfield was closed to civil traffic in September 1969.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Irregularly shaped area.
Sandy clay surface on sandstone base. Efficient drainage. Slight downward slope from NE to SW.

DAY MARKINGS AND WIND IND.

Windcone near control tower. Signals area. Landing indicator. Runway designation markings. Threshold, centre-line, side and touch-down markings on runway. Identification sign "TAKORADI" on ground opposite control tower. Taxiway longitudinal and holding position markings.

TAXI-TRACKS TARMACS AND DISPERSALS

Asphalt taxiway (75 ft wide) from NE threshold of runway to asphalt apron (LCN 12) by terminal building. Hardstandings (asphalt) available on disused runways. Concrete apron in front of hangars.

•Co-ordinates and Local Position are taken from this sheet

RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	Approach, threshold, runway and taxiway lighting. Emergency flarepath available. Partial obstruction lighting.
FUEL STORAGE	Jet fuel and avgas available. Drum storage. Underground bulk storage and hydrant system. f Bulk fuel storage 1,077,340 galls at Takoradi.
HANGARS WORKSHOPS POWER SUPPLY ETC.	Three metal hangars in E sector: two 175 x 90 ft with door clearances 90 x 27 ft. One of 90 x 124 ft door clearances 124 x 25 ft. No repair facilities. Crash equipment (2 crash tenders, 1 rescue tender). Limited cargo handling facilities.
ADMINISTRATIVE BUILDINGS	Control tower near centre of runway. Terminal building. Civil administrative offices. First-aid facilities at airfield. Hospital at Takoradi. Customs and immigration facilities.
DOMESTIC ACCOMMODATION	None at airfield. Hotels and Guesthouse at Takoradi.
TELE-COMMUNICATIONS	Telephone and telegraph available.
WATER	Unlimited mains supply.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	All-weather tarmac road (width 22 ft) from airfield to Takoradi.
RAIL	Station and sidings at Takoradi on line Sekondi-Kumasi-Accra. Siding adjacent to airfield.
WATER	Deep-water harbour and port facilities at Takoradi.
OPERATORS AND USERS	Military airfield controlled by Ghana Air Force. Civil airlines.
METEOROLOGICAL INFORMATION	Met. office at airfield. *Prevailing winds:* SW. Line squalls and thunder occur throughout year. especially March-June and October-November. *Rainy season:* April-July. October-November. *Visibility:* Generally good. Fog very rare. *Aerodrome Ref. Temperature:* 29°C.
REMARKS	Originally a small landing ground, this airfield was enlarged and developed by the RAF in the early part of World War II. It was used extensively as a base for anti-submarine patrols, a staging post, and as a maintenance depot. In 1947 the airfield was vacated by the RAF and placed under the control of the local government; it has since been operated principally for civil purposes. At one time there were three runways, but two of these were allowed to deteriorate and in 1949 were operationally abandoned and they are now usable as taxi-tracks and parking areas. In early 1961 the airfield was taken over and administered by the Ghana Air Force. It is available to civil traffice on scheduled services.

ISSUE DATE: December 1969
AL.1

COUNTRY	**GHANA**	**TAMALE**
MAP REFERENCES	* Series G504 Sheet NC 30-12 2nd Edition	09° 25' N 00° 53' W **ELEV:** 600 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

2 nm W of Tamale, on the N side of the Tamale/Daboya secondary road.
Tamale water reservoir lies about 1.8 nm to the E. In northern Ghana, some 235 nm NNW of Accra.
Surrounding country, flat with scattered trees and bush.

A/F REF. POINT

Centre of runway.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	70		SW corner of LG
Hill		1,000	SW at approx 8 nm

Scattered trees around airfield.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NNW/SSE	160°/340°	4,300 x 150	Bitmac	LCN 10 (h 6)		

Additional information: In use by F.27 aircraft. 300 ft overrun at each end of runway. Runway extendible.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Irregular in shape with one bituminised macadam runway.
Off runway - grass covered laterite with downward slope from N to S. Side drains to runway, and natural drainage.

DAY MARKINGS AND WIND IND.

Runway designation numerals "16" and "34". Side, threshold, centre-line and touch-down markings on runway. Windcone at N end of runway. Landing indicator. Taxi-track centre-line and holding position markings.

TAXI-TRACKS TARMACS AND DISPERSALS

Short bitmac taxi-track (75 ft wide) leading to small bitmac apron at E side of runway.

FACILITIES

R/T and/or W/T contact. Homing facilities.
Portable runway and taxiway lighting operated from mains or standby generator.
Avtur/Avgas available. Drum storage. Refuelling by hand pump.
Fire fighting equipment. Small concrete control tower and terminal building.
First aid facilities available. 1 ambulance. Mains water supply from Tamale.
Telephone and telegraph. Rest house, hospital at Tamale.
Limited cargo handling facilities.
Crash equipmement (2 crash tenders, 1 rescue tender).
Customs and immigration services.

ACCESS:- ROAD Tarmac road from Tamale to the airfield.

RAIL Nil

WATER Nil

OPERATORS AND USERS

Department of Civil Aviation.
Ghana Airways. Ghana Air Force.

METEOROLOGICAL INFORMATION

Met. Station
Prevailing winds: SW. April to October, N, November-March.
Aerodrome Reference Temperature: 32.2°C.
Rainy season: June to November.
Visibility: Generally good. Subject to harmattan haze December to February.

REMARKS

This civil airport was first reported in 1941 as an emergency field. It was originally developed as an advanced operational base in 1942 for the Royal Air Force, but appears to have been seldom used in World War II.

In 1947 the existing strip was re-surfaced with bituminised macadam and is now used by Ghana Airways on scheduled domestic services. The airfield is also used by Ghana Air Force for training purposes.

DIS/DI.35

*Co-ordinates and Local Position are taken from this sheet

ISSUE DATE: December 1969
AL.1

COUNTRY	**GHANA**	**TAMALE (NEW)**
MAP REFERENCES	• Series G504 2nd Edition AMS Sheet NC 30-12	09° 33' N 00° 51' W **ELEV:** 600 ft (approx)
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

9 nm N of Tamale and immediately W of the Tamale/Nabogo road. 8 nm N of Tamale old airfield. In northern Ghana some 240 nm NNW of Accra.
Surrounding country generally flat with scattered trees and bush.

A/F REF. POINT

Centre of runway.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Hill		1,000	16 nm to SW

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR -
Runway under construction				Estimated LCN 45		
NE/SW	230°/050°	8,000 x 150	Asphaltic concrete			

Additional information: New airfield under construction. Overruns 600 ft each end runway planned, 90 ft wide shoulder each side of runway. Original project for 11,450 ft runway abandoned but runway extendible. Expected to be partially usable by mid-1971.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Extent of area not known but strip at least 9,200 x 435 ft cleared. Natural surface grass on laterite. Natural drainage properties not known but artificial drainage is being installed.

DAY MARKINGS AND WIND IND.

To be provided on completion.

TAXI-TRACKS TARMACS AND DISPERSALS

A quick return taxi-way (75 ft wide) with cross over (66 ft wide) to dispersal area planned.

FACILITIES

Complete facilities for 3 squadrons plus civil airline facilities projected.

ACCESS:- ROAD

Main road from Tamale (Tamale linked by road to Kumasi, Accra and Takoradi).

RAIL

Nil - Nearest rail head Kumasi (200 nm to SW).

WATER

Nil - Accra, 240 nm away is nearest port.

OPERATORS AND USERS

U/c for use by GAF and Ghana Airways.

METEOROLOGICAL INFORMATION

Prevailing wind: April to October SW; November-March N.
Rainy season: June-November. Visibility good apart from Harmattan haze December to February.

REMARKS

Construction of this new airfield began in 1965. A major airfield with an 11,500 feet concrete runway was planned and work began with Russian aid. Later re-appraisal by the Ghana Government stopped work and a revised project was approved. Work recommenced in 1967 with a Danish firm carrying out construction. However progress has been slow and completion of the project is unlikely before 1971-72.

• Co-ordinates and Local Position are taken from this sheet

GHANA

APPENDIX 'A' - FORMER LANDING GROUNDS AND ALIGHTING AREAS

The following list includes (a) landing grounds previously reported but believed to have been abandoned and no longer usable, and (b) flying-boat alighting areas not in use and with no facilities.

NAME AND CO-ORDINATES	LOCAL POSITION	DIMENSIONS AND SURFACE	REMARKS
ADA FBAA 05° 47' N 00° 49' E	1 nm NNE of Ada in W channel of Volta River	9,000 ft	Reported abandoned 1959
KETE KRACHI 07° 48' N 00° 04' W	Volta Lake	3,000 x 100 ft	Submerged duringbuilding of Volta Dam. New airstrip built nearby
KINTAMPO 08° 03' N 01° 43' W	1 nm SW of Kintampo, W side of Kintampo/Kumasi road	4,200 x 200 ft Laterite	Constructed in 1942 but never completed
KOMENDA 05° 03' N 01° 30' N	Just W of Komenda on the coast, about 15 nm ENE of Takoradi	3,000 x 150 ft Laterite	Formerly used by Fleet Air Arm and abandoned in 1944
TAKORADI FBAA 040 53' N 01° 45' W	Just E of Takoradi inside the breakwater	3,000 x 3,000 ft	Former civil FB Base
WIAWSO 06° 13' N 02° 29' W	1 nm N of Wiawso village	2,100 x 159 ft Laterite	Reported abandoned in 1942

DIS/DI.35
September 1968

VI. NIGERIA

NIGERIA

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
ANUA 05^{0} 02' N 07^{0} 58' E 250 ft Sheet 815 Edition 1	Exact position not known but reported to be about 22 nm WNW of Calabar and 3 nm NE of Aka village	ENE/WSW $250^{0}/070^{0}$ 1,310 x 80 ft Laterite	None reported	Private landing ground used by timber company. No information available on present condition or use
AWOMAMA 05^{0} 40' N) T 06^{0} 56' E) Sheet 815 Edition 1	Along OWERRI/ONITSHA road. About 13 nm N of OWerri and 7 nm S of Uli. On outskirts of Awomama	7,000 x 75 ft Bitmac. WBC: Super constellation A road strip on the main Owerri/Onitsha road	Possibly R/T and W/T. Homing facilities and runway lighting	Reported in use by the Biafrans April 1969
AZARE (784 8009) 11^{0} 41' N 10^{0} 12' E 1,200 ft Sheet 784 Edition 1	On the E outskirts of Azare and just N of the Azare-Potizkum secondary road	NE/SW $225^{0}/045^{0}$ 2,460 x 90 ft Laterite and grass	Corner markings. Wind direction indicator. Name in white letters on S side of strip, near the centre. Telephone. Limited accommodation and medical facilities in Azare	Civil landing ground maintained for occasional and emergency use. Buildings in Azare form permanent obstruction at SW end
BAUCHI (784 8001) 10^{0} 18' N 09o 49' E 2,003 ft Sheet 784 Edition 1	About 60 nm ENE of Jos and 1.7 nm SSW of Bauchi, on the E side of the Bauchi-Lugge road	NW/SE $151^{0}/331^{0}$ 6,000 x 150 ft NE/SW $231^{0}/051^{0}$ 3,900 x 150 ft Laterite and grass. WBC DC-3 aircraft. Both strips have 225 ft shoulders and 200 ft overruns each end	Side and corner markings. Two grassed laterite taxi-tracks (75 ft wide) from the NE/SW strip lead to a grassed laterite parking apron 600 x 300 ft on NW side. AVGAS available on prior arrange ment. Telephone, telegraph and limited accommodation available in Bauchi. Potable water available	Public landing ground constructed in 1941/42 and used by the RAF and West African Airways. Present use not known. Landing ground surrounded by hills
BELI 07^{0} 52' N)T 10^{0} 57' E) Sheet 814 Edition 1	Exact position not known but believed to be in the vicinity of Beli Village which lies on the S bank of the Taraba river about 3 nm NW of the Cameroun border	1,800 x 90 ft Laterite	None reported	No recent information on the condition of this light aircraft strip

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
BENIN CITY (815 8001)	See Information Sheet and plan			
BESSE 11^0 16' N 04^0 27' E 700 ft Sheet 783 Edition 1	Exact position not known but reported to be about 10.5 nm SSW of Koko, 8.5 nm WSW of Kangi and on the outskirts of Besse Village	NE/SW $240^0/060^0$ 1,140 x 90 ft Earth	None reported	Private landing ground first reported in late 1965. Used by the Flying Doctor Service
BETE 07^0 00' N 09^0 45' E 900 ft Sheet 815 Edition 1	Exact position not known but reported to be about 51 nm S of Wukari, 9 nm NE of Kasimbila and 8 nm NNW of Nigadi	NNW/SSE $170^0/350^0$ 2,460 x 60 ft Laterite	None reported	Private landing ground first reported available in April 1968. Used by the Sudan United Mission
BIDA (783 8007) 09^0 06' N 06^0 01' E 450 ft Sheet 783 Edition 1	About 23 nm SW of Kataeregi, 8.5 nm WNW of Badeggi and on the NNE outskirts of Bida	NNE/SSW $221^0/041^0$ 3,600 x 150 ft Laterite WBC: DC-3	Homing facilities. Threshold and side markings. 75 ft wide laterite taxi-track on W side leads to laterite apron (200 x 150 ft approx). Administration building. Rest house, Telephone and water available.	Civil landing ground first reported available in 1943, for emergency use. Formerly used by West African Airways, but now believed to be maintained for emergency or occasional use

BIRNIN KEBBI (694 8018) 12° 29' N 04° 18' E 900 ft Sheet 694 Edition 1	Exact position not known but reported to be about 65 nm WSW of Sokoto and 7 nm ENE of Birnin Kebbi, alongside the Birnin Kebbi-Argungu road	NE/SW 230°/050° 2,395 x 90 ft Laterite	Wind direction indicator	Civil landing ground first reported available in 1957. No information available on present condition, but believed to be maintained for occasional and emergency use
BIU (784 8017) 10° 35' N 12° 11' E 2,800 ft Sheet 784 Edition 1	About 25 nm NNE of Shani, 4.5 nm WNW of Kida and 1 nm SSW of Biu	NE/SW 230°/050° 2,800 x 150 ft Grass/laterite	None reported	Light aircraft strip first reported available in 1957. No recent information on condition or use
BUKWIUM 12° 06' N 05° 29' E 950 ft Sheet 694 Edition 1	Exact position not known but reported to be about 4 nm W of Matsafa and in the vicinity of Bukwium village (Not shown on map)	N/S 180°/360° 1,075 x 120 ft Laterite	None reported	Private landing gtound, first reported available in 1965. Used by the Flying Doctor Service
BURSALI (693 8802) 12° 27' N 10° 43' E 1,200 ft Sheet 693 Edition 2	Exact position not known but reported to be about 36 nm E of Hadejin, 11 nm ENE of Bagam and 5.5 nm W of Bulabulin	ENE/WSW 250°/070° 2,800 x 100 ft Earth	None reported	This former private landing ground was reopened in 1966 for use by the Sudan Interior Mission. Present condition and use not known

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
BUSSA (783 8021) 10° 15' N 04° 33' E Sheet 783 Edition 1	Exact position not known but reported to be on the W bank of the River Niger, about 2 nm N of Bussa and just S of Kagogi	NE/SW 225°/045° 2,100 x 90 ft Laterite	Wind direction indicator	Civil landing ground first reported available in 1957. Early 1968 new airfield reported under construction in the vicinity of Bussa, with 5,000 ft bitumen runway WBC DC-3. No further details
CALABAR (815 8002)	See Information Sheet			
CROSS RIVER MILLS 06° 00' N 08° 18' E 500 ft Sheet 815 Edition 1	Exact position not known but reported to be about 63.5 nm N of Calabar and 1 nm E of Apiapum village which lies on the E bank of the River Cross	NNW/SSE 160°/340° 1,700 x 100 ft Laterite	None reported	This private landing ground was first reported available in January 1966 and is owned and operated by the Calabaa Veneer and Plywood Co.
DAKINGARI 11° 38' N 04° 04' E 690 ft Sheet 783 Edition 1	Exact position not known but reported to be in the vicinity of Dakingari village, which lies about 29 nm WNW of Koko and 11 nm W of Jadadi	NNW/SSE 160°/340° 1,000 x 150 ft Earth	None reported	Private light aircraft strip first reported available in late 1965. Used by the Flying Doctor service

ENUGU (815 8003)	See Information Sheet and Plan			
ESCRAVOS (815 8029)	See Information Sheet			
FILIYA 09° 35' N 11° 06' E 1,300 ft Sheet 784 Edition 1	Exact position not known but reported to be about 27 nm S of Kumo, 3 nm E of Gundale, and 1 nm NW of Dilla	NE/SW 220°/040° 2,100 x 150 ft Laterite	None reported	Private landing ground first reported in October 1968. Used by Sudan United Mission
GBOKO (815 8029) 07° 20' N) T 08° 57' E) Sheet 815 Edition 1	Exact position not known but reported to be in the vicinity Gboko village which lies about 34 nm SE of Makurdi	NE/SW 230°/050° 1,900 x 90 ft Laterite	None reported	Civil landing ground first reported available in 1957. Present use and condition not known
GEIDAM 12° 53' N) T 11° 58' E) Sheet 693 Edition 2	Exact position not known but reported to be in the vicinity of Geidam which lies about 12.5 nm SE of Dumbol and 20 nm S of the Niger border	2,100 x 90 ft Natural surface	None reported	Minor landing ground first reported available in March 1964. No information on present use or condition

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
GOMBAR (784 8015) 09° 21' N 09° 26' E 2,500 ft Sheet 784 1st Edition	Exact position not known but reported to be on the Jos Plateau, about 48 nm WNW of Gani and 2 nm NE of Pankshin	N/S 188°/008° 1,870 x 200 ft NE/SW 238°/058° 1,470 x 200 Laterite	None reported	Private landing ground owned and operated by Gombar Tin Mines Ltd. Hills to SSW, SW and NW 2,700 ft above A/F level at 2.5 to 5 nm
GOMBE 10° 17' N 11° 10' E 1,600 ft Sheet 784 Edition 1	Exact position not known but reported to be about 15 nm N of Kumo and 4 nm E of Doma	NE/SW 225°/045° 2,100 x 90 ft Laterite	None reported	Civil landing ground first reported available in 1965
GUMEL (693 8013) 12° 38' N 09° 23' E 1,300 ft Sheet 693 Edition 2	About 63 nm NE of Kano and 1 nm NW of Gummel (spelt Gumel on map). The Niger border lies about 11 nm N	NE/SW 230°/050° 2,100 x 120 ft Gravel	None reported	Civil landing ground first reported available in 1956/57. No information on present condition or use
GUSAU (693 8003) 12° 11' N 06° 41' E 1,520 ft Sheet 693 Edition 2	About 26 nm SSE of Kaura Namoda and 2 nm NE of Gusau	NE/SW 231°/051° 4,800 x 150 ft Laterite Shoulders 225 ft each side and 300 ft overruns each end WBC DC-3. Occasional C-130	Side and corner markings. Wind direction indicator. R/T and/or W/T and homing facilities. AVGAS available in barrels. Laterite taxi-track leads to laterite parking apron 600 x 200 ft on NW side. Railway workshops at Gusau. Fire fighting equipment. Telegraph and Rest House at Gusau	This landing ground was constructed during World War II for emergency use. Since 1947 has been used by Civil airlines on domestic services operating DC-3 aircraft. Believed well maintained

HADEJIA (693 8014) 12° 28' N 10° 02' E Sheet 693 Edition 2	Exact position not known but reported to be about 93 nm ENE of Kano, 38 nm ESE of Gumel and 5 nm W of Hadejia village	NE/SW 230°/050° 2,100 x 120 ft Laterite U/s after heavy rain	None reported	Civil landing ground first reported available in 1957. No recent information available on condition or use
IBADAN (816 8013)	See Information Sheet and Plan			
IDAH (815 8021) 07° 07' N 06° 47' E 600 ft Sheet 815 Edition 1	About 36 nm NE of Uromi, 22 nm SSE of Ajaokuta and 4 nm E of Idah	NNE/SSW 220°/040° 3,500 x 150 ft Laterite WBC F 27 (dry)	None reported	Civil landing ground first reported available in 1960. In 1967 the strip was extended from 1,500 ft to 3,500 ft to accommodate military aircraft
IHIALA	See Uli			

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
ILORIN (783 8008)	See Information Sheet			
ISOKO (815 8036) 05° 32' N 06° 15' E 49 ft Sheet 815 Edition 1	About 65 nm NW of Port Harcourt, 16 nm W of Aboh and 3 nm E of Usoro	NE/SW 240°/060° 1,200 x 300 ft Grass	None reported	First reported available in 1964, this private landing ground was used by an oil company during exploration of oilfield. No longer used in 1965, but could be made available if required
JALINGO (784 8014) 08° 52' N) T 11° 20' E) 1,000 ft Sheet 784 Edition 1	Exact position not known but believed to be on the NW slopes of the Shebshi mountains, in the vicinity of Jalingo town	ENE/WSW 260°/080° 2,000 x 90 ft Turfed laterite	Wind direction indicator. Name "JALINGO" near wind direction indicator	Minor landing ground constructed in 1955/56. No recent information on condition or use
JOS (784 8002)	See Information sheet			

KABBA (815 8028) 07° 51' N 06° 04' E 1,600 ft Sheet 815 Edition 1	On the NE outskirts of Kabba which lies on a plateau about 40 nm W of Lokoja	NE/SW 230°/050° 1,800 x 90 ft Laterite	None reported	Private landing ground first reported available in 1955/56
KADUNA (784 8003)	See Information Sheet			
KAINGIWA 12° 33' N 03° 49' E 950 ft Sheet 694 Edition 1	About 40 nm NW of Jega, 22.5 nm WNW of Birnin Kebbi and on the NE outskirts of Kaingiwa. The Niger border lies about 4.5 nm NW	NE/SW 240°/060° 1,000 x 100 ft Laterite	None reported	Private landing ground first reported in late 1965. Used by the Flying Doctor Service
KALTUNGO (784 8011) 09° 49' N 11° 18' E 1,200 ft Sheet 784 Edition 1	About 16 nm SSE of Kumo, 7 nm W of Tula and on the S outskirts of Kaltungo	N/S 190°/010° 2,700 x 120 ft Earth Liable to be soft in rainy season May to October	Strip markings Wind direction indicator	Private landing ground first reported available in 1960. Used by the Sudan Interior Mission

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
KAMBA 11° 51' N 03° 40' E 700 ft Sheet 783 Edition 1	Exact position not known but reported to be in the vicinity of Kamba, which lies on the Nigeria-Niger border, about 4.5 nm WNW of Kangakoe	E/W 280°/100° 1,000 x 100 ft Earth	None reported	Light aircraft strip first reported available in late 1965. Used by the Flying Doctor Service
KANO (693 8005)	See Information Sheet and Plan			
KATSINA (693 8004) 13° 00' N 07° 39' E 1,400 ft Sheet 693 1st Edition	About 3.5 nm E of Katsina and immediately S of the Katsina-Daura main road	NE/SW 225°/045° 4,050 x 150 ft E/W 289°/089° 3,300 x 150 ft Laterite WBC DC-3	Threshold markings. Wind direction indicator. Small natural surface parking area. Three small buildings. Water available Telephone, telegraph and Rest House in Katsina	Civil landing ground constructed in 1942. In post war years it was used occasionally by local aircraft. Now reported maintained for emergency use only
KEBBI 12° 03' N 04° 45' E 750 ft Sheet 694 Edition 1	Exact position not known but reported to be in the vicinity of Kebbi village which lies about 24.5 nm W of Gummi and 22 nm ESE of Jega	NNE/SSW 200°/020° 1,320 x 100 ft Laterite	None reported	Private landing ground first reported available in late 1965. Used by the Flying Doctor Service

KEFFI (784 8018) 08° 50' N 07° 53' E 900 ft Sheet 784 Edition 1	Exact position not known but reported to be about 21 nm NNE of Nasarawa and 1.5 nm SE of Keffi. Just S of the Keffi-Gudi main road	NE/SW 225°/045° 1,900 x 90 ft Laterite	None reported	Civil landing ground first reported available in 1955/56. Present condition and use not known
KIRIKIRI 06° 26' N 03° 19' E 30 ft approx Sheet 816 Edition 2	Exact position not known but reported to be near the coast about 5 nm WSW of Lagos	An open landing area; dimensions not known	Wind direction indicator	Landing ground used by the Federal Flying Training School and Lagos Flying Club
KONTAGORA (783 8022) 10° 25' N 05° 25' E 1,100 ft Sheet 783 1st Edition	Exact position not known but reported to be about 24 nm S of Chifu, 17 nm ESE of Ibeto and 3 nm W of Kontagora	NE/SW 225°/045° 2,100 x 90 ft Laterite	None reported	Civil landing ground first reported available in 1955/56. No recent information available
KWOI 09° 27' N 08° 01' E 2,000 ft Sheet 784 Edition 1	Exact position not known but reported to be about 14 nm W of Zankan and 3 nm East of Samban Gida	2,100 x 90 ft Earth	None reported	Private landing ground first reported available in 1964. Used by the Sudan Interior Mission

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMAKRS
LAGOS (IKEJA) (0816-8014)	See Information Sheet and Plan			
LOKOJA (0815 8004) 07° 48' N 06° 33' E 320 ft Sheet 815 1st Edition	9 nm W of Lokoja; just N of Lokoja/Okene road, 26 nm NE of Okene	NE/SW 232°/052° 3,000 x 150 ft Laterite Capacity 10,000 lbs AUW N/S 188° /008° 2,400 x 150 ft Laterite. Light A/C only. Runways and thresholds marked	Wind indicator. 3 small buildings. Water supply limited. Telegraph and rest house in Lokoja	Civil landing ground first used in WW II. Now used occasionally by civil aircraft. Maintained as emergency LG for A/C on Kano/Benin city route
MAIDUGURI (0785 8000)	See Information Sheet and Plan			
MAKURDI (815 8005)	See Information Sheet and Plan			

MIANGO (0784 8801) 09° 51' N 08° 40' E 4,000 ft Sheet 784 1st Edition	Adjacent to town of Miango. 14 nm W of Jos airfield	NE/SW 234°/054° 2,700 x 100 ft Earth Light a/c only	None reported	Private - first reported in 1967. Used by Sudan Interior Mission
MINNA (0783 8009) 09° 37' N 06° 32' E 861 ft Series G504 Sheet NC 32-9 2nd Edition	.5 nm NW of Minna railway station and just N of Minna/Zungeru railway. W of Minna/Zungeru road. 25.5 nm SE of Zungeru	NE/SW 230°050° 3,000 x 200 ft Grassed laterite NW/SE 140°/320° 3,000 x 200 ft Grassed laterite Both runways suitable for light aircraft only. Etendible	Control tower signal square Wind indicator Strip markings and A/F name	Civil landing ground first reported 1936. Emergency use in WW II. No recent information of use but believed maintained as ELG
MUBI 0785 8028 10° 17' N 13° 16' E 2,200 ft Sheet 785 1st Edition	95 nm S of Maiduguri 0.5 nm of Mubi on E side of the Mubi/Uba fairweather road	NE/SW 225°/045° 3,000 x 120 ft Laterite 500 ft grass overrun at SW end. Extendible. Beverly a/c has used in dry season	Wind indicator Strip marking Grass parking area 150 x 100 ft	Civil landing ground first reported 1960. Extended 1961
NGURU 12° 48' N 10° 37' E 1,129 ft Sheet 693 1st Edition	Approx 7.5 nm SE of Nguru. Just N of Nguru/Gorgeram road 135 nm NE of Kano	NE/SW 225°/045° 4,050 x 150 ft Grass on firm earth E/W 270°/090° 3,600 x 150 ft Grass on firm earth soft after heavy rain suitable for light a/c	Telegraph in Nguru	Emergency landing ground constructed during WW II. Reported to be serviceable and used occasionally

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SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
OBILAGU (0815 8812) 05° 50' N) P. Approx 07° 30' E) Sheet 815 Edition 1	Along Okigwi/Eze main road about 10 miles E of Okigwi. Enugu/Umuahia/Port Harcourt railway runs about 5 miles E of strip	NE/SW $070^{\circ}/250^{\circ}$ 8,000 x 75 ft Runway part of Bituminised road - undulating. WBC - Reported DC-6 a/c	Possibly R/T and W/T homing facilities and runway lighting	Reported in use by Biafrans in September 1968. Captured by Federal forces in late 1968 and believed to be still usable
OBOLO 05° 40' N 07° 13' E Sheet 815 Edition 1	Midway between Umuahia and Orlu, about 1 nm S of Obolo	Believed to run E/W with a final length of 8,000 ft, bitmac. Only 2,000 ft bush cleared when reported in March 1969	No information available	Reported under construction in March 1969 (for relief purposes) from funds provided by Canadian Charitable organisation
ODEGI 08° 22' N 07° 52' E 1,040 ft Sheet 784 1st Edition	3 nm NW of Udegi Beki village and 13 nm SE of Nasarawa	NE/SW $240^{\circ}/060^{\circ}$ 3,000 x 150 ft Grass Light a/c only	None reported	Private airfield operated by Tin & Assoc. Minerals Ltd.
OFUNAMA 06° 08' N 05° 13' E 17 ft Sheet 815 1st Edition	26 nm SW of Benin City in the Benin river delta area. 3 nm SW of village of Ovenama	NNE/SSW $210^{\circ}/030^{\circ}$ 1,200 x 90 ft PSP Light aircraft	None reported	Private landing ground operated by an oil company. Not in regular use
OLOIBIRI 04° 47' N 06° 21' E 17 ft Sheet 815 1st Edition	In Niger river delta area. 40 nm W of Port Harcourt 15 nm NNW of Nembe	N/S $190^{\circ}/010^{\circ}$ 1,200 x 90 ft Bitamc Light a/c	None reported	Private landing ground operated by Shell/BP Development Corp.

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OSHOGBO (0815 8007) 07° 46' N 04° 29' E 1,000 ft Series G 504 Sheet NB 31-3 1st Edition	3.5 nm ENE of Edde Just N of Oshun river and between the Osbogbo/Edde railway and main road. 4.5 nm W of Oshogho (Sheet NB 31-4)	NE/SW 230°/050° 4,680 x 150 ft Grassed laterite (DC 3 capable) E/W 270°/090° 3,000 x 150 ft Grassed laterite A/c up 6,000 lbs AUW	Grass taxiway from E end of both strips to parking apron (400 x 100 ft) in front of terminal building, R/T and W/T, Homing facilities; Control tower. Storage building. Rest house and telegraph in Oshogbo	Civil landing ground first reported in 1936. RAF Staging Post in WW II. Closed to regular traffic 1951 but runway still maintained
OWERRI (0815 8037) 05° 31' N 07° 01' E 280 ft Sheet 815 1st Edition	Approx 1 nm N of Owerri just E of Owerri/obaku road. 40 nm N of Port Harcourt	N/S 190°/010° 1,200 x 90 ft Bitmac Light a/c only	None reported	Small private landing ground operated by Shell/BP Corp. whilst prospecting. Reported not in use but runway serviceable - 1965
OWERRI NORTH	See Awomama			
OYI RIVER (0783 8016) 08° 17' N 05° 41' E 700 ft Sheet 783 1st Edition	2 nm E of Ejiba and about 50 nm SSW of Bida. River Oyi lies adjacent to W end of airfield	NE/SW 225°/045° 2,500 x 100 ft Laterite Light a/c only. Soft when wet	Limited fuel storage Wind indicator	Private landing ground used by Sudan Interior Mission

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
PATEGI (0783 8801) 08° 43' N 05° 45' E 490 ft Sheet 783 1st Edition	Just S of Pategi village and 2 nm S of confluence of Niger/Kaduna rivers 26.5 nm SW of Bida	N/S 196°/016° 2,400 x 90 ft Laterite Light aircraft up to 7,000 lb AUW	None reported	Civil airstrip reported available for use 1966
PORT HARCOURT (0815 8008)	See Information Sheet & Plan			
POTISKUM (0784 8005) 11° 42' N 11° 03' E 1,600 ft Sheet 784 1st Edition	Approx 1 nm WSW of Potiskum; in the angle formed by Potiskum/Bauchi road (to the E) and the Potiskum/Agane minor road to the N	NE/SW 230°/050° 4,500 x 150 ft Laterite E/W 276°/096° 2,400 x 150 ft Laterite Both strips have 75 ft wide grass shoulders on each side, are extendible, and suitable for light aircraft	Limited fuel and oil. Wind indicator. Hardstandings at each end of strips. 2 short taxiways from E/W strip to parking apron. Road served. Telegraph and limited accommodation in Potiskum	Civil airstrip. First used in WW II as staging post on Accra/Khartoum route. Now used occasionally by domestic air lines for refuelling or in emergency
SABON BIRNI 13° 34' N 06° 19' E 1,050 ft Sheet 693 2nd Edition	Adjoining village of Sabon Birni, some 5 nm S of border with Niger. 87 nm NNW of Gusau	E/W 280°/100° 1,200 x 120 ft Earth Light a/c only	None reported	Private airstrip used by Flying Doctor's Service. First reported in 1965

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SHENDAM (0784 8013) 08° 54' N 09° 28' E Below 1,000 ft Sheet 784 1st Edition	On southern outskirts of Shendam. 26 nm S of Pankshin and 21.5 nm SW of Langtang	NE/SW 220°/040° 2,100 x 90 ft Laterite Light a/c only. Soft when wet	None reported	Civil airstrip first reported in 1960
SHINKAFE 13° 04' N 06° 30' E 1,150 ft Sheet 693 2nd Edition	Exact position not known. Near Shinkafe village, between the rivers Bunsura and Gagere. About 53 nm NNW of Gusau	N/S 180°/360° 1,500 x 200 ft Grass Light a/c only	None reported	Civil airstrip first reported 1965. In use by Flying Doctor Service
SOKOTO (0694 8010) 13° 01' N 05° 15' E 1,150 ft Sheet 694 1st Edition	2.75 nm S of Sokoto and 5 nm NNW of Shuni, just W of the Sokoto/Shuni road	NNE/SSW 212°/032° 4,740 x 150 ft Bitmac with Laterite ends. ESWL 20,000 lbs at 60 psi for use by DC 3 a/c. ENE/WSW 258°/078° 3,300 x 150 ft Laterite Light aircraft only	Wind Indicator. Signal square. Homing facility. Avgas in barrel storage. Minor repairs. Fire fighting equipment. Terminal building and control tower. Laterite taxi-way from E end of runways to laterite apron (800 x 300 ft) Telephone and telegraph in Sokoto	Civil landing ground built during WW II. In regular use by domestic airline
SURU 11° 54' N 04° 11' E 600 ft Sheet 783 1st Edition	Exact position not known. Reported near village of Suru, 19 nm NE of River Niger and 44 nm ESE of Gaya	NW/SE 150°/330° 1,050 x 150 ft Grass Light a/c only	None reported	Small private airstrip used by Flying Doctor Service. First reported 1965

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SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
TAKUM (0815 8022) 07° 15' N 10° 00' E 800 ft Sheet 815 1st Edition	Just S of Takum village 38 nm SSE of Wukari and 41 nm E of Katsina Ala. 10 nm N of Gamana river	E/W 270°/090° 2,640 x 100 ft Laterite Light a/c only Soft when wet	None reported	Private airstrip operated by Sudan United Mission. First reported 1960. Obstruction - radio mast 70 ft a.g.l. .3 nm 078° from RP
UBULU (0815 8033) 06° 13' N 06° 28' E 800 ft Sheet 815 1st Edition	19 nm W of Onitsha 1.5 nm W of Ogwashi-Uku. 52 nm E of Benin A/F and just S of Benin-Onitsha main road	NNE/SSW 210°/030° 1,200 x 90 ft Rolled earth Light a/c only	None reported	Private strip operated by Shell/BP Corp. whilst prospecting. Reported abandoned 1965 but could be made serviceable quickly
UGA (0815 8814) 05° 58' N 07° 05' E 738 ft Sheet 815 Edition 1	A road strip on Akokwa/Awka road. On northern outskirst of Uga. 3 nm NW of Akokwa	N/S 360°/180° 7,000 x 80 ft Bitmac WBC: Super constellation, DC-6	R/T and Homing beacon Runway lighting	Constructed and used by Biafrans 1968/69
UGHELLI (0815-8031) 05° 31' N 05° 56' E 31 ft Sheet 815 1st Edition	3 nm WNW of Ughelli. 12 nm E of Warri. 52 nm SSE of Benin A/F	NNE/SSW 210°/030° 2,700 x 300 ft Grass Light a/c only. Dove a/c are used	Homing facilities	Private airstrip operated by Shell/BP Corp. whilst prospecting in area. First reported 1965. Reported closed to all flying in October 1969
ULI (815 8813) 05° 46' N 06° 52' E 217 ft Sheet 815 Edition 1	A road strip on the main Owerri/Onitsha road. Close to Uli village and about 3 nm S of Ihialla	NNW/SSE 340°/160° 7,780 x 75 ft Bitmac WBC: Super constellation, DC-7	R/T and Homing beacon. Runway lighting	Main airfield for logistic support to Biafra. Constructed in 1968

UZERE/PATANI 05° 24' N 06° 14' E 30 ft Sheet 815 1st Edition	In Niger delta, 4 nm N of Patani. 19 nm SW of Aboh and 23 nm SSW of Ogume. 57 nm NW of Port Harcourt A/F	NNE/SSW 220°/040° 3,000 x 270 ft Grass Light a/c only. Caution needed during rainy season	None reported	Private, Shell/BP Corp. operated airstrip first reported 1960
WARRI 05° 32' N 05° 45' E 120 ft Sheet 815 1st Edition	1.5 nm E of Warri on N bank of Warri river in Niger delta area. 38 nm SW of Ogume 48 nm S of Benin City	NNE/SSW 210°/030° 2,400 x 150 ft Grass Light aircraft only. Soft in rainy season	None reported	Private, Aero Contractors of Nigeria operated airstrip
WASAGU 11° 22' N 05° 50' E 1,500 ft Sheet 783 1st Edition	Exact position not known. In vicinity of Wasagu village 73 nm NE of Yelwa	E/W 270°/090° 1,165 x 100 ft Grass Light a/c only	None reported	Private airstrip used by Flying Doctor Service. First reported 1965
WAWA/KAINJI (0783 8017) 09° 54' N 04° 25' E 715 ft Sheet 783 1st Edition	Exact position not known. A/F is 4 nm from Kainji Dam Camp and near Wawa village, 11 nm W of Niger river. Approx 85 nm N of Ilorin	NE/SW 220°/040° 4,000 x 100 ft Bitmac, LCN 15. Turning circles each end. 100 ft cleared at sides and ends of runway. Runway and threshold markings	Wind indicator Homing facilities Limited Avgas holding	Private airfield provided to serve the Kainji Dam Project. First reported 1965

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES GSGS 4695 (1:1,000,000)	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
WUKARI (0815 8030) 07° 51' N 09° 48' E Below 1,000 ft Sheet 815 1st Edition	Exact position not known. A/F lies on Eastern outskirts of Wukari town. 76 nm E of Makurdi and 21 nm S of Benue river	NE/SW 230°/050° 2,100 x 90 ft Light aircraft only Soft when wet	None reported	Civil landing ground constructed 1956 and used occasionally by light a/c
YAU 13° 33' N 13° 13' E 1,000 ft Sheet 692 2nd Edition	Exact position not known. Near the Nigerian border and some 10 miles W of the shores of Lake Chad. 10 nm NW of Arege	NE/SW 225°/045° 2,560 x 90 ft Earth Light aircraft only	None reported	Civil landing ground first reported 1966
YELWA (0783 8010) 10° 48' N 04° 49' E 800 ft Sheet 783 1st Edition	Approx 7 nm SE of Yelwa at junction of Yelwa/Kontagara and Yelwa/Gwand roads. 6 nm E of Niger river	E/W 270°/090° 3,160 x 300 ft Grassed laterite Suitable DC 3 aircraft N/S 180°/360° 2,350 x 300 ft Grassed laterite Both reported as all weather. 75 ft shoulders each strip. Strip and threshold markings	Two short laterite taxiways (75 ft wide) lead from E/W runway to laterite parking apron (600 x 240 ft) Small admin. building Telephone, telegraph and rest house in Yelwa Road access	Civil landing ground first reported in 1941. Little used since WW II but believed maintained for emergency use
YOLA (0784 8006) 09° 16' N 12° 26' E 625 ft	Approx 4 nm NW of Yola on the N side of the Yola/Numan road. About 2.5 nm from W bank of Benue river and 27 nm SE of the confluence of the Benue/Gongola rivers	NNW/SSE 168°/348° 6,600 x 150 ft WNW/ESE 122°/302° 4,800 x 150 ft NNE/SSW 213°/033° 3,300 x 150 ft All strips unsealed laterite, and all have 225 ft shoulders on both sides. Capacity varies markedly with seasons of the year	Homing facilities Control tower Avgas available 2 taxiways from 16/34 strip lead to parking apron (600 x 100 ft) Admin building. Fire fighting equipment. Water available. Telephone and telegraph, rest house at Yola	Developed in WW II to serve the reinforcement route to ME 1945. Since handed over to Civil Authorities and now used by domestic airline

ZARIA (0784 8007) 11° 08' N 07° 41' E 2,150 ft Sheet 784 1st Edition	Approx 2.5 nm NW of Zaria, to the S of Zaria/Funtua road and railway. 35 nm NNE of Kaduna airfield	NE/SW 233°/053° 5,400 x 150 ft Laterite. ESWL 6,500 lbs at 53 psi - but subject to marked seasonal variation. Grass shoulders, 150 ft wide on each side of strip	Short laterite taxiway (75 ft wide) leads from strip to laterite apron. Signals square. Avgas available Fire fighting equipment Water available Telephone, telegraph and rest house in Zaria	Constructed for RAF use early in WW II. Since handed over to Civil Authorities and used by domestic airlines. Now used by charter/private aircraft
ZONKWA (0784 8012) 09° 47' N 08° 18' E Below 3,000 ft Sheet 784 1st Edition	1 nm NNE of Zonkwa immediately N of the Zonkwa/Kaduna railway, 70 nm SE of Kaduna A/F 35.5.nm WSW of Jos	NNE/SSW 210°/030° 1,500 x 300 ft Laterite and grass Light a/c only. Soft when wet	None reported	Civil airstrip built 1960 and believed maintained for emergency use
ZURU (0783 8023) 11° 26' N 05° 17' E 1,200 ft Sheet 783 1st Edition	In a valley 3 nm E of Zuru village and the Zuru/Kontagora road. 49 nm NE of Yelwa A/F and 62.5 nm N of Kontagora town	NE/SW 240°/060° 2,100 x 90 ft Laterite Light aircraft only Soft when wet	None reported	Civil airstrip built 1956 and used by light aircraft or in emergency

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ISSUE DATE: December 1969
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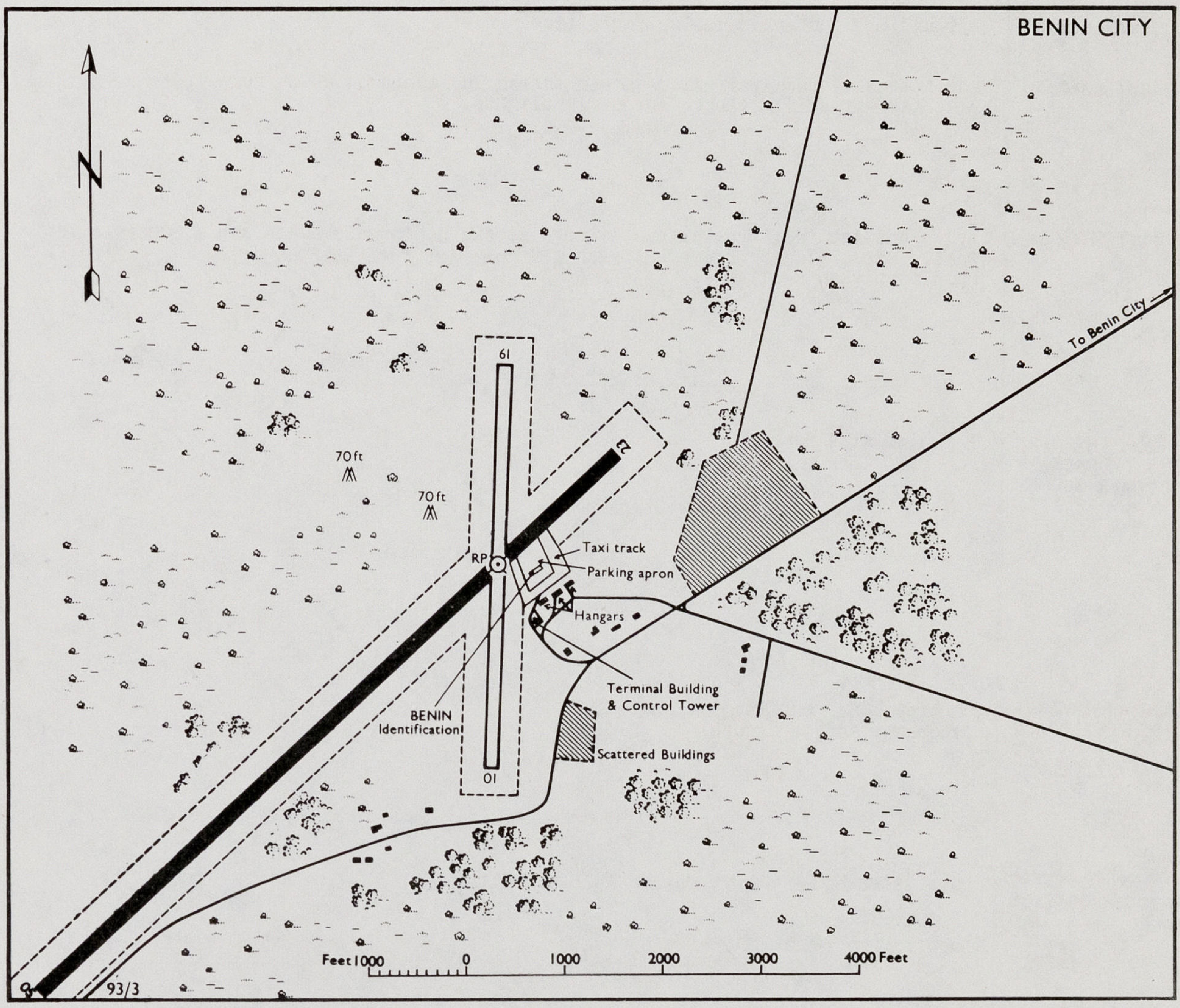
COUNTRY	**NIGERIA**	**BENIN CITY**
MAP REFERENCES	• GSGS 4695 (1:1,000,000) Sheet 815 (1st Edition)	**BE:** 815 8001 06^{0} 19' N 05^{0} 36' E **ELEV:** 260 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	About 2 nm WSW of Benin City and immediately W of the Benin City/Ogba secondary road. Surrounding country flat with forest and bush.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Control Tower	30		SE: at approx 750 ft
Masts	70		NW: at approx 750 and 1,800 ft



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NE/SW	234^{0}/054^{0}	8,000 x 150	Bitmac	20,000 lbs ESWL at 60 psi		Nil
N/S	189^{0}/009^{0}	4,100 x 150	Grass	–		– 14 ft S end

Additional information: In regular use by F.27 aircraft. Graded shoulders 200 ft wide both sides of runway and strip.
NE/SW runway extended in 1968 and has been used by NAF IL 28 jet light bomber and MIG 17 jet fighter aircraft.
Grass strip liable to become soft in rainy season.

•Co-ordinates and Local Position are taken from this sheet

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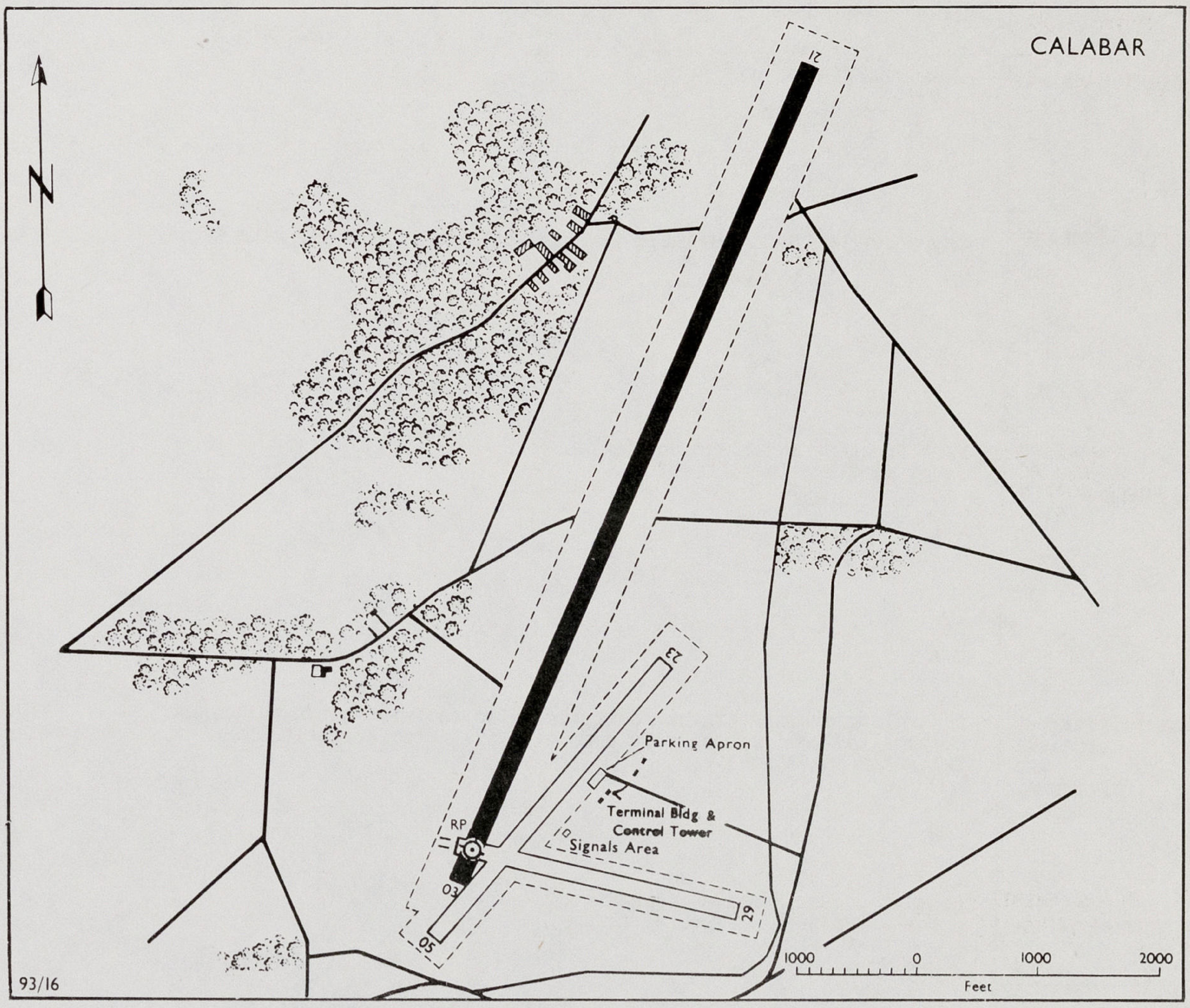
NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Irregular in shape with one bitmac runway and one grass strip. Off runway - grass surface with natural drainage. Liable to become soft in rainy season.
DAY MARKINGS AND WIND IND.	Runway and strip markings. Windcone near runway intersection.
TAXI-TRACKS TARMACS AND DISPERSALS	2 bitmac taxiways lead from NE/SW runway to a bitmac parking apron due E of intersection.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	Low intensity runway lights. Green threshold lights on NE/SW runway. Blue taxi-track lighting. Apron floodlights.
FUEL STORAGE	Avgas and jet fuel available. Average stocks 3,000 gals avgas and 3,000 gals jet fuel. Refuelling by bowsers (Avgas 150 gpm, jet fuel at 300 gpm). Hand pump also available.
HANGARS WORKSHOPS POWER SUPPLY ETC.	2 medium size hangars.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Control tower and terminal building. Telephone and telegraph.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Hotel/Rest house accommodation in Benin City. Supply from Benin City.
AMMUNITION STORAGE	
ACCESS:- ROAD	Access road on SE side of airfield leads to Benin City/Ogba secondary road. Benin City lies on main Agure/Asaba road.
RAIL	Nil
WATER	Nil
OPERATORS AND USERS	Nigerian Air Force and Ministry of Transport (Aviation Division). Used by NAF and Nigeria Airways.
METEOROLOGICAL INFORMATION	Met. office in Benin City. *Prevailing wind:* SW April to October; NE November to April. *Rainy season:* April-October. *Visibility:* Harmattan haze and low cloud December and January.
REMARKS	This airfield was first reported in 1941 when two natural surface strips were available. It was improved for military purposes in World War II, after which it was converted to civil use by Nigerian Airways domestic services in 1968. The Federal Government used the airfield for mounting air attacks by IL 28, MIG 17 and L 29 jet aircraft against Biafran Forces. The NE/SW runway was extended to 6,050 ft in 1967 and 8,000 ft in 1968.

ISSUE DATE: December 1969
AL.1

COUNTRY	**NIGERIA**	**CALABAR**
MAP REFERENCES	• GSGS 4695 (1:1,000,000) Sheet 815 1st Edition	**BE:** **815 8002** 04° 58' N 08° 20' E **ELEV:** 206 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	About 1.5 nm E of Calabar, the airfield lies S of the Calabar/Ikang secondary road and about 1.5 nm NW of a horseshoe bend in the Calabar river. Surrounding country undulating with numerous areas of palm trees.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	N/K		SE of apron at about 2,650 ft
Trees on all sides of airfield.			



RUNWAYS AND STRIPS

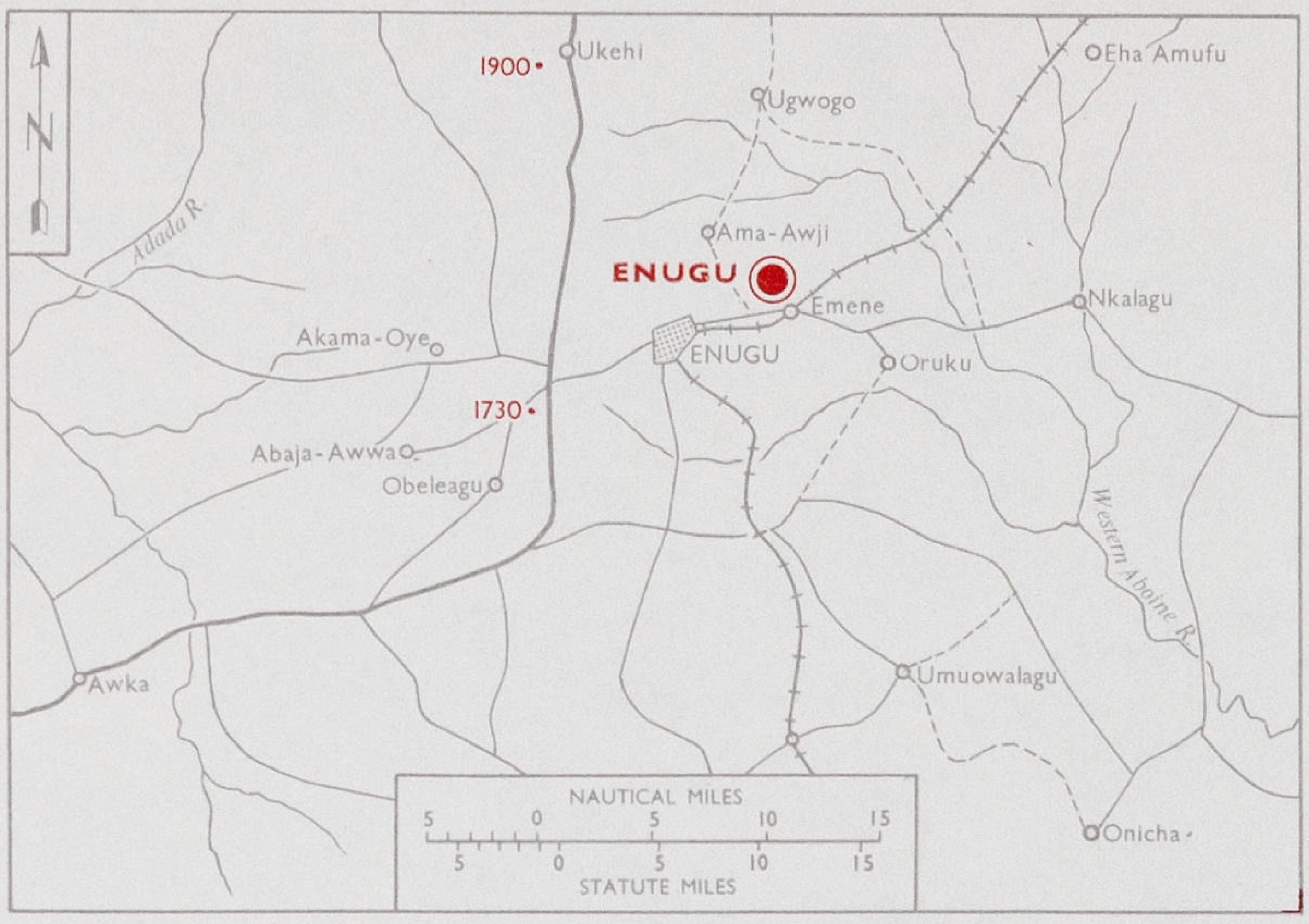
DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NNE/SSW	214°/034°	8,000 x 150	Bitmac	*LCN 10 (h10) 15,000 ESWL at 60 psi		
WNW/ESE	114°/294°	2,400 x 150	Grass			
NE/SW	232°/052°	3,000 x 150	Grass			

Additional information: *LCN 10 reported but runway has been used by DC 4 aircraft with 10 ton payloads without difficulty in dry weather. NAF IL 28 jet bomber and MIG 17 jet fighter aircraft have operated from this airfield.
Graded shoulders on each side of runway and strip.
NNE/SSW runway extended in 1968.

•Co-ordinates and Local Position are taken from this sheet

(121395)45

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	An irregular shaped area with one hard surfaced runway and two grass strips. Off runway - grass surface with natural drainage.
DAY MARKINGS AND WIND IND.	Runway designation numerals '21' and '03', '11' and '29'. Main runway threshold and centre line markings. Side and corner markings. Name "CALABAR" inscribed in centre of airfield. Signals square and wind indicator.
TAXI-TRACKS TARMACS AND DISPERSALS	Bitmac taxiway from NNE/SSW runway to bitmac parking apron SE of and near centre of runway. The apron was extended in 1968 present dimensions not known.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	Gooseneck flares available.
FUEL STORAGE	Avgas and jet fuel available (average holding (1967) 500 gals avgas. 2,500 gals jet).
HANGARS WORKSHOPS POWER SUPPLY ETC.	Fire fighting and crash equipment. Cargo handling facilities.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Control tower and terminal building. Two administrative buildings. Customs and Immigration. Telephone. First aid facilities. Telegraph in Calabar.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Rest house and hospital in Calabar. Mains water supply from Calabar.
AMMUNITION STORAGE	
ACCESS:- ROAD	Calabar/Ikang secondary road adjacent to N limit of airfield.
RAIL	Nil
WATER	Port facilities in Calabar.
OPERATORS AND USERS	NAF and Ministry of Transport/Civil Aviation Dept. Nigeria Airways.
METEOROLOGICAL INFORMATION	Met. office at airfield. *Aerodrome reference temperature:* 29°C. *Prevailing winds:* NE to E November to April, SW May to October. *Rainy season:* April to October. *Visibility:* Subject to early morning fog May to October and occasional harmattan haze November to April.
REMARKS	This civil airfield, constructed during the early part of World War II, has been in regular use by civil airline since 1947. It was enlarged and improved during 1951/52 by the construction of a bituminised macadam runway, and various airfield facilities. It is in regular use by Nigeria Airways. In 1968 the airfield was also used by NAF MIG 17 fighters and IL 28 jet bomber aircraft the NNE/SSW runway being extended to permit these operations.



ENUGU

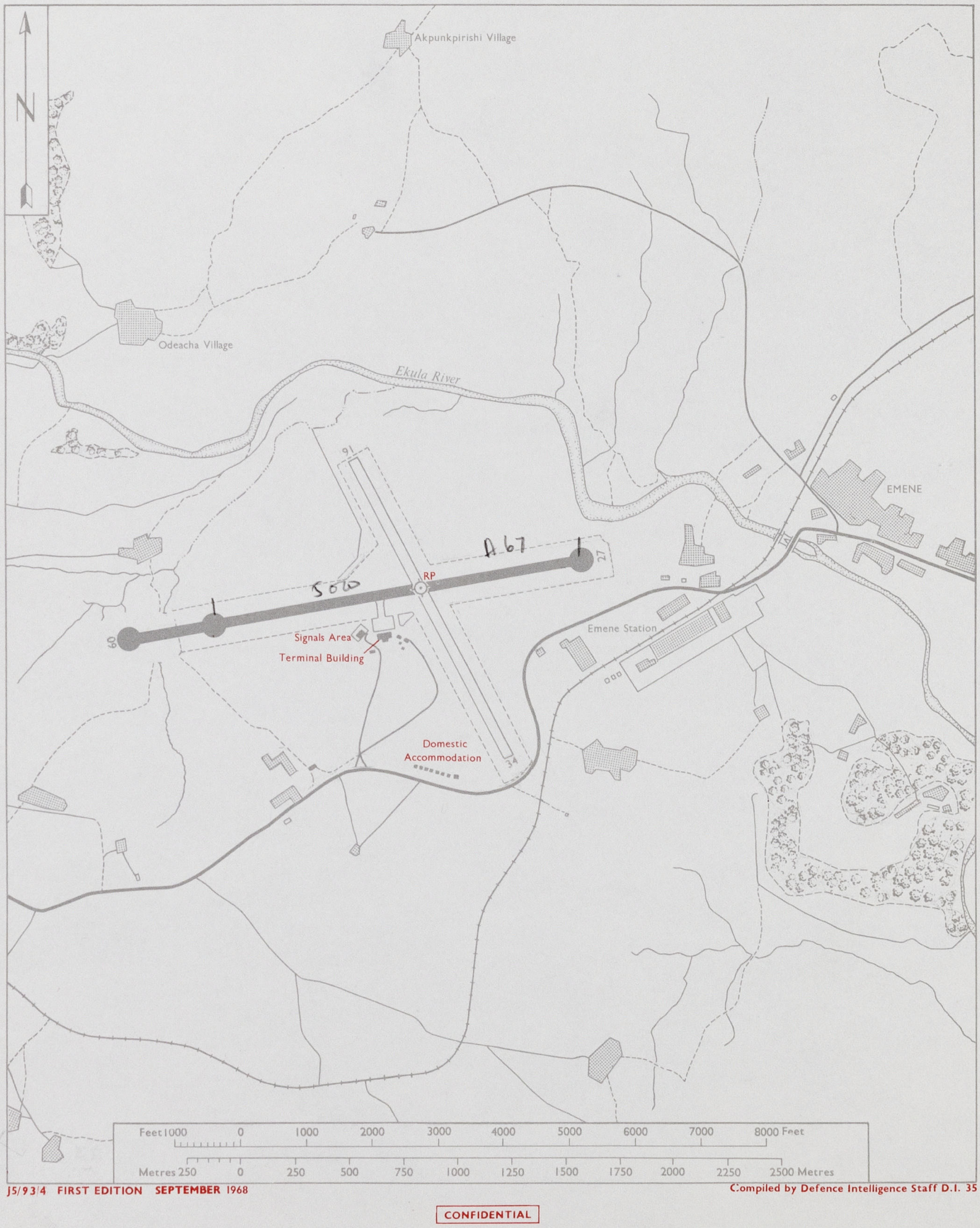
NIGERIA

06° 29′ N.
07° 33′ E.

ELEVATION 461 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



J5/93/4 FIRST EDITION SEPTEMBER 1968

Compiled by Defence Intelligence Staff D.I. 35

COUNTRY	**NIGERIA**	**ENUGU**
MAP REFERENCES	* GSGS 4695 (1:1,000,000) Sheet 815 Edition 1	**(815 8003)** 06° 29' N 07° 33' E **ELEV:** 461 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

About 4.75 nm ENE of Enugu, just N of the Enugu/Abakaliki secondary road and the Enugu-Makurdi railway. 19 nm SE of Aku.
Surrounding country, undulating with scattered trees.

A/F REF. POINT

Intersection of runways.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	73		SW of strip intersection at approx 2,400 ft.
Buildings			S of, and adjacent to runway intersection.
Mast		1,650	WSW at approx 5.7 nm.

Pole line along road off S boundary. Range of hills (1,785 ft ASL) extending N/S at approximately 8 nm W. Scattered trees 60 to 100 ft in vicinity of airfield.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
E/W	268°/088°	7,000 x 150 (see below)	* Asphalt	LCN 10 (est)		
NNW/SSE	161°/341°	4,050 x 150	Laterite			

Additional information: In regular use by F-27 aircraft, but during the Ibo evacuation in 1966 was frequently used by heavily overloaded DC-6 aircraft of Pan African Airways. Grass shoulders on each side of runways. Turning circles 300 ft each end of E/W runway. Runways are extensible. Has been used by NAF IL-28 and MIG-17 aircraft.
*Runway damaged by bombing (1968). Temporary repairs made but WBC formerly LCN 40 reduced to LCN 10 and only 6,000 ft E/W believed usable.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

An irregularly shaped area with one asphalt and one laterite runway.
Off runways - grass surface with natural and some artificial drainage. Slightly undulating.

DAY MARKINGS AND WIND IND.

Runway designation numerals "09" and "27", "16" and "34". Threshold and side markings on runways. Name "ENUGU" inscribed in white on NW side of runway intersection. Windcone.

TAXI-TRACKS TARMACS AND DISPERSALS

Asphalt parking apron (180 x 360 ft approx) adjoins E/W strip on S side near its centre.

FACILITIES

R/T and/or W/T contact. Homing facilities. Emergency gooseneck lighting.
Avgas and jet fuel available (average holding 4,000 galls Avgas; 4,000 galls jet).
Rate of flow: Avgas 150 gpm. Jet 150 gpm.
Resupply from Port Harcourt. Refuelling by bowser.
Administration and Terminal Building. Telephone and telegraph. Teleprinter at Enugu.
Fire fighting equipment.
Rest house at Enugu.

ACCESS:- ROAD

Access road on S side leads onto the Enugu/Abakaliki secondary road. All-weather road from Enugu to Port Harcourt.

RAIL

Railway station at Emene, approximately 0.75 nm to the E and at Enugu, 4.75 nm WSW of the airfield.

WATER

OPERATORS AND USERS

Ministry of Transport (Aviation Division).
Nigeria Airways.

METEOROLOGICAL INFORMATION

Met. station at Enugu.
Prevailing winds: SW April to September. NE October to March.
Rainy season: April to October.
Visibility: Generally good. Harmattan haze in dry season reduces visibility.

REMARKS

This airfield was constructed in the early stages of World War II for military purposes, but since 1944 it has been in regular use as a civil airport.

In 1966 the E/W runway was surfaced with asphalt and extended to 6,000 ft and during the Ibo evacuation was frequently used by overloaded DC-6 aircraft. In early 1967 the feasibility of development of the airfield to international standards was under consideration and at the same time the runway was extended to 7,000 ft. The airfield was used by both Biafran and Federal Military Government forces in 1967 following secession by the Eastern Region. In 1968 the airfield was attacked, damaged and occupied by FMG forces.

DIS/DI.35

*Co-ordinates and Local Position are taken from this sheet

ISSUE DATE: December 1969
AL.1

COUNTRY	**NIGERIA**	**ESCRAVOS**
MAP REFERENCES	* GSGS 4695 (1:1,000,000) Sheet 815 Edition 1	05° 36' N 05° 11' E **ELEV:** 5 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

Situated S of the mouth of the Escravos river. Ugborodo lies 2.5 nm SW on the coast.
Warri 33 nm to the E and 49 nm SSW of Benin City.
Surrounding country: River Benin swamp delta area.

A/F REF. POINT

Centre of runway.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NW/SE	120°/300°	5,100 x 100	Bitmac	See below		

Additional information: Suitable DC-3 and F-27 aircraft. WBC 14,000 lb ESWL at 50 lb psi (est.).

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

A rectangular area with one Bitmac runway.

DAY MARKINGS AND WIND IND.

Wind direction indicator.

TAXI-TRACKS TARMACS AND DISPERSALS

FACILITIES

R/T and/or W/T contact. Homing facilities.
Runway lighting available on request.
Telephone/radio communication.
Helicopter landing Pad.
1 small hangar.

ACCESS:- ROAD

RAIL

WATER

Connection to Lagos and Port Harcourt by boat.

OPERATORS AND USERS

Ministry of Transport (Aviation Division).
Gulf Oil Company.

METEOROLOGICAL INFORMATION

Prevailing wind:	SW April to November, NE November to April.
Rainy season:	April to October.
Visibility:	Harmattan haze dry season.

REMARKS

In February 1966 the Gulf Oil Co. awarded a contract to Internation Aeradio Ltd. for the installation and maintenance of radio equipment in this oil producing area. The centre of these activities was selected at Escravos. The landing ground was first reported in 1967 when it was taken over by the Federal Military Government in support of their forces against the Eastern Region. An extension of the runway from 3,600 ft to 5,100 ft was completed in late 1967.

DIS/DI.35

*Co-ordinates and Local Position are taken from this sheet

UNCLASSIFIED

IBADAN

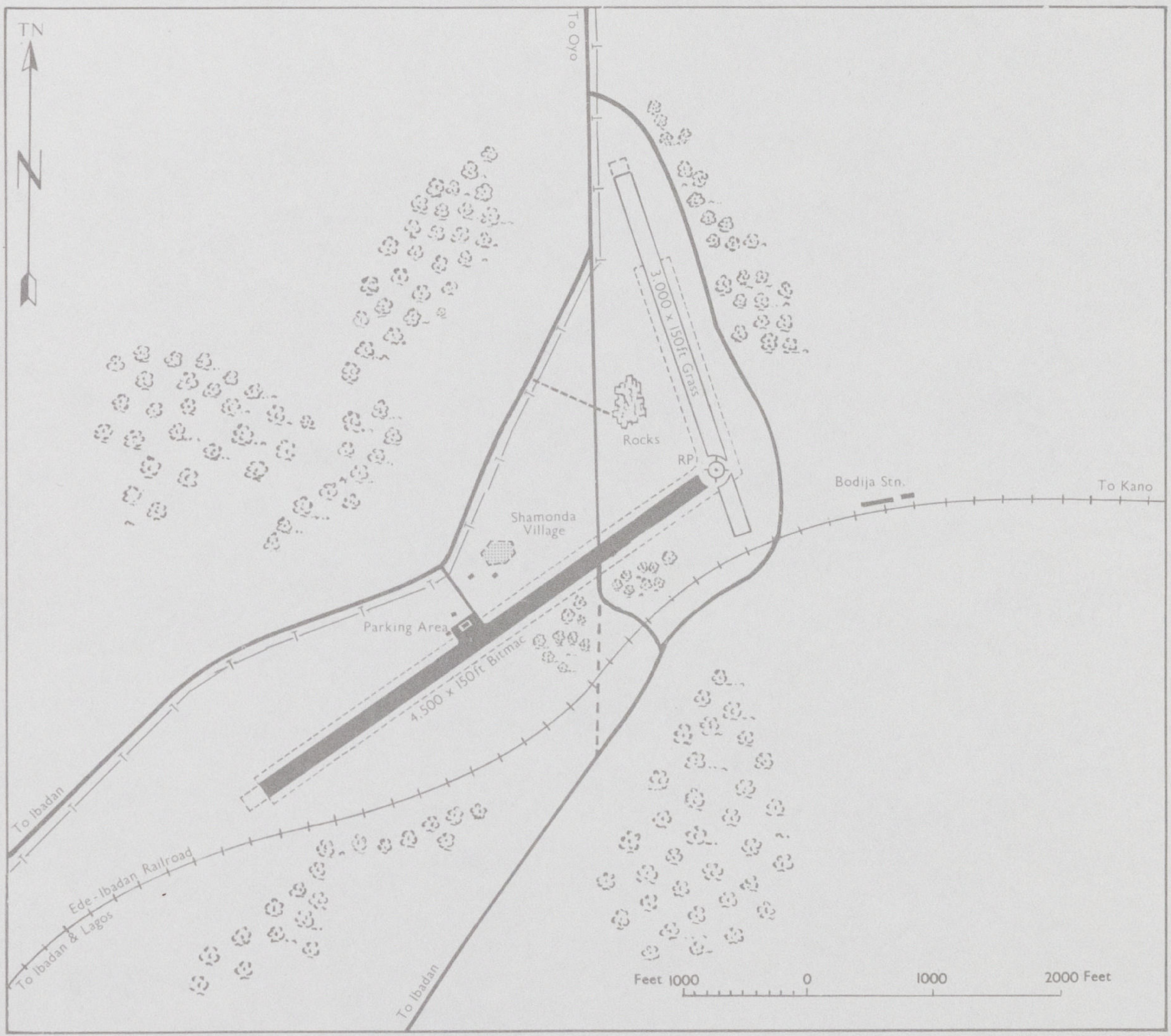
NIGERIA

07° 26′ N.
03° 54′ E.

ELEVATION 769 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL ……	480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ……	(100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



93/6 **FIRST EDITION SEPTEMBER 1968**

Compiled by Defence Intelligence Staff D.I. 35

UNCLASSIFIED

ISSUE DATE: September 1968

COUNTRY	**NIGERIA**	**IBADAN**
MAP REFERENCES	* Sheet G 504 (1:250,000) NB 31-3 Edition 2	07° 26' N 03° 54' E **ELEV:** 769 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

Landing ground is situated 3 nm N of Ibadan, just NW of the Ibadan/Ede railway and just W of Ibadan/Oyo road.
Surrounding country, undulating and covered with trees and bush.

A/F REF. POINT

Intersection of runways.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	440		SSW: at approx 2.75 nm
Hills	300		SW: at approx 1 nm
Mast		1,130	S: at approx 2.5 nm
Trees (50 ft) on all sides			

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NE/SW	243°/063°	4,500 x 150	Bitmac	15,000 ESWL @ 80 lb psi		
NNW/SSE	169°/349°	3,000 x 150	Grass			

Additional information: In regular use by F-27 aircraft. Could support limited C-130 operations. Upslope for first 500 ft on R/W 24, then downslope. WBC of grass runway subject to great seasonal variation.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Irregular in shape with one runway and one strip.
Off runways, grass surface, liable to become soft in rainy season.

DAY MARKINGS AND WIND IND.

Windcone at E end.

TAXI-TRACKS TARMACS AND DISPERSALS

Short bitmac taxi-track (approx 75 ft wide) at centre of NE/SW runway leads to bitmac apron (200 x 150 ft) on NW side.

FACILITIES

R/T and/or W/T contact. Homing facilities. Emergency flarepath.
Avgas and jet fuel available. Drum storage and one 2,000 gall surface tank. (Average holding 1,300 galls avgas; 2,100 galls jet). Rate of flow (refuelling), Avgas 25 gpm (hand pump); jet 100 gpm (hydrant). Re-supply from Apapa (125 miles).
Workshop available for minor repairs.
Small terminal building with tower.
Fire fighting equipment. Water available.
Telephone. Telegraph and rest house at Ibadan.

ACCESS:- ROAD Road from Lagos and Ibadan.

RAIL Railway from Lagos.

WATER

OPERATORS AND USERS

Ministry of Transport (Aviation Division).
Nigeria Airways.

METEOROLOGICAL INFORMATION

Met office available.
Prevailing winds: April to September, SW. October to March, NE.
Rainy season: April to October.
Visibility: Harmattan haze in dry season, otherwise very good.

REMARKS

This airfield has been in existence since 1941, being constructed originally for the use of the Royal Air Force. Since the end of World War II it has been maintained and used by civil airlines on regular internal services.

*Co-ordinates and Local Position are taken from this sheet

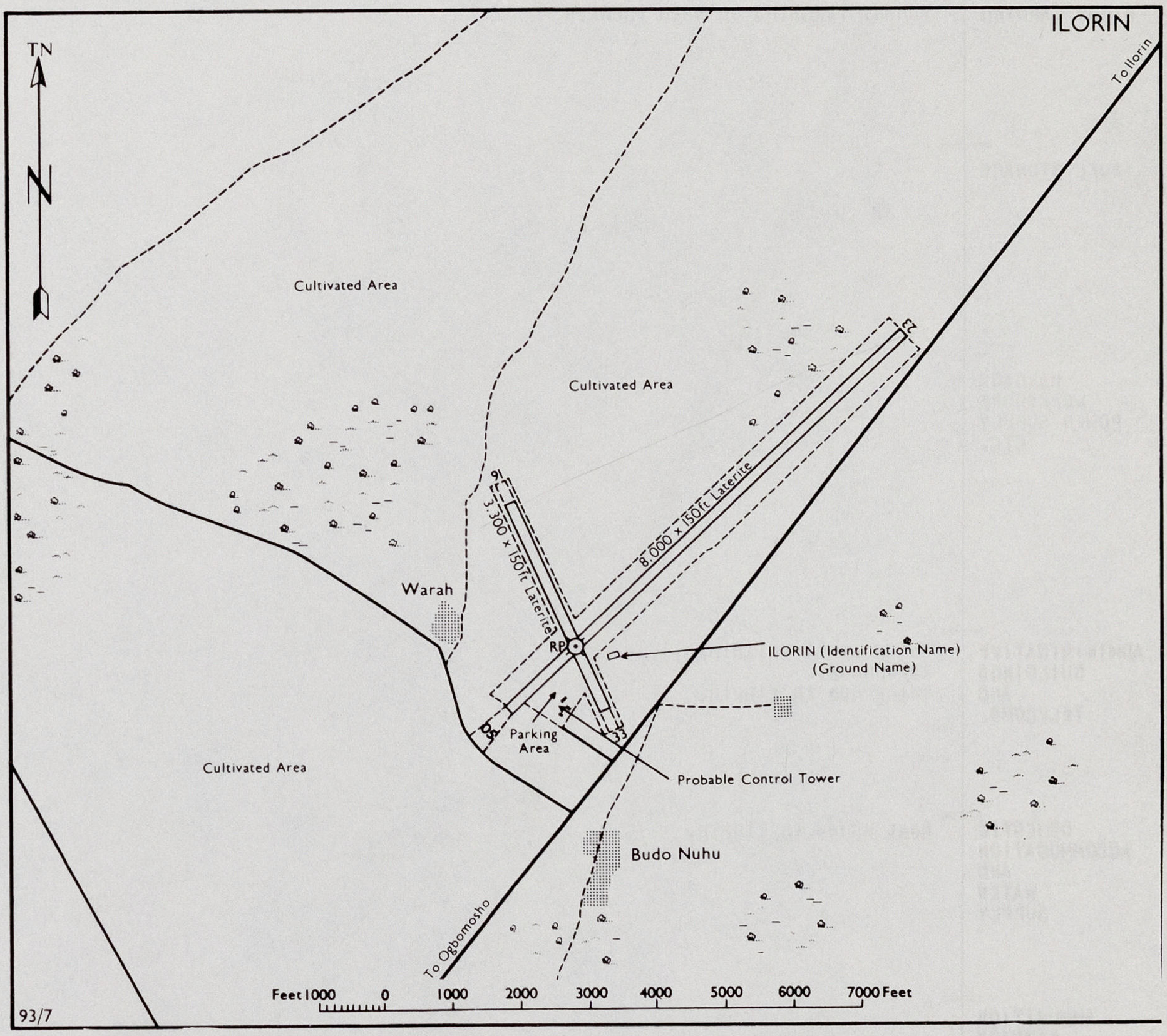
CONFIDENTIAL

ISSUE DATE: September 1968

COUNTRY	NIGERIA	ILORIN
MAP REFERENCES	• G504 (1:250,000) Sheet NC 31-15. 1st Edition	**BE:** 783 8008 08° 25'N 04° 28'E **ELEV:** 1,134 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	About 150 NM NE of Lagos and approximately 21 nm NE of Ogbomosho; 6.5 nm SW of Ilorin, just W of the main Ilorin/Ogbomosho road. Surrounding country, undulating with scattered trees and bush.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Huts	15		E of, and adjacent to NNW end of strip
Buildings			SW sector of LG
Scattered trees (15-20 ft) on all sides			



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NE/SW	234°/054°	7.6 8,000 x 150	Laterite			
NNW/SSE	163°/343°	3,300 x 150	Laterite			

Additional information: Grass shoulders on both sides of strips. 23/05 Runway extended 1967. Reported in use by NAF IL 28 jet bomber aircraft.

•Co-ordinates and Local Position are taken from this sheet

(107455)95

CONFIDENTIAL

ILORIN (Contd)

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	An irregularly shaped area with two intersecting prepared runways. Off strips - grass surface with slight downward slope to N. Natural drainage.
DAY MARKINGS AND WIND IND.	Side and threshold markings. Name 'ILORIN' in white on E side of intersection. Windsock.
TAXI-TRACKS TARMACS AND DISPERSALS	Parking area just S of intersection.
RADIO AIDS	R/T Contact.
NIGHT LANDING	Runway lighting on both runways.
FUEL STORAGE	
HANGARS WORKSHOPS POWER SUPPLY ETC.	
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Three small buildings. Telephone. Telegraph in Ilorin.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Rest house in Ilorin.
AMMUNITION STORAGE	
ACCESS:- ROAD	Access road S of airfield leads to main Ilorin/Lagos road.
RAIL	Single track rail from Ilorin to Lagos.
WATER	
OPERATORS AND USERS	NAF and Nigerian Civil Authorities (Aviation Dept.)
METEOROLOGICAL INFORMATION	Prevailing winds: NE November to March. SW April to October. Rainy season: April to October. Visibility: Low clouds in rainy season. Early morning mist December to May.
REMARKS	This Airfield was constructed during 1941 as an emergency field and was in use throughout World War II when it was enlarged and improved. For some years after the end of the 1939/45 war it was used by West African Airways Corporation on regular internal services, and was reported to be used by light aircraft in connection with a local mission up to 1951. It is reported that the airfield will eventually be developed as a base for the Nigerian Air Force.

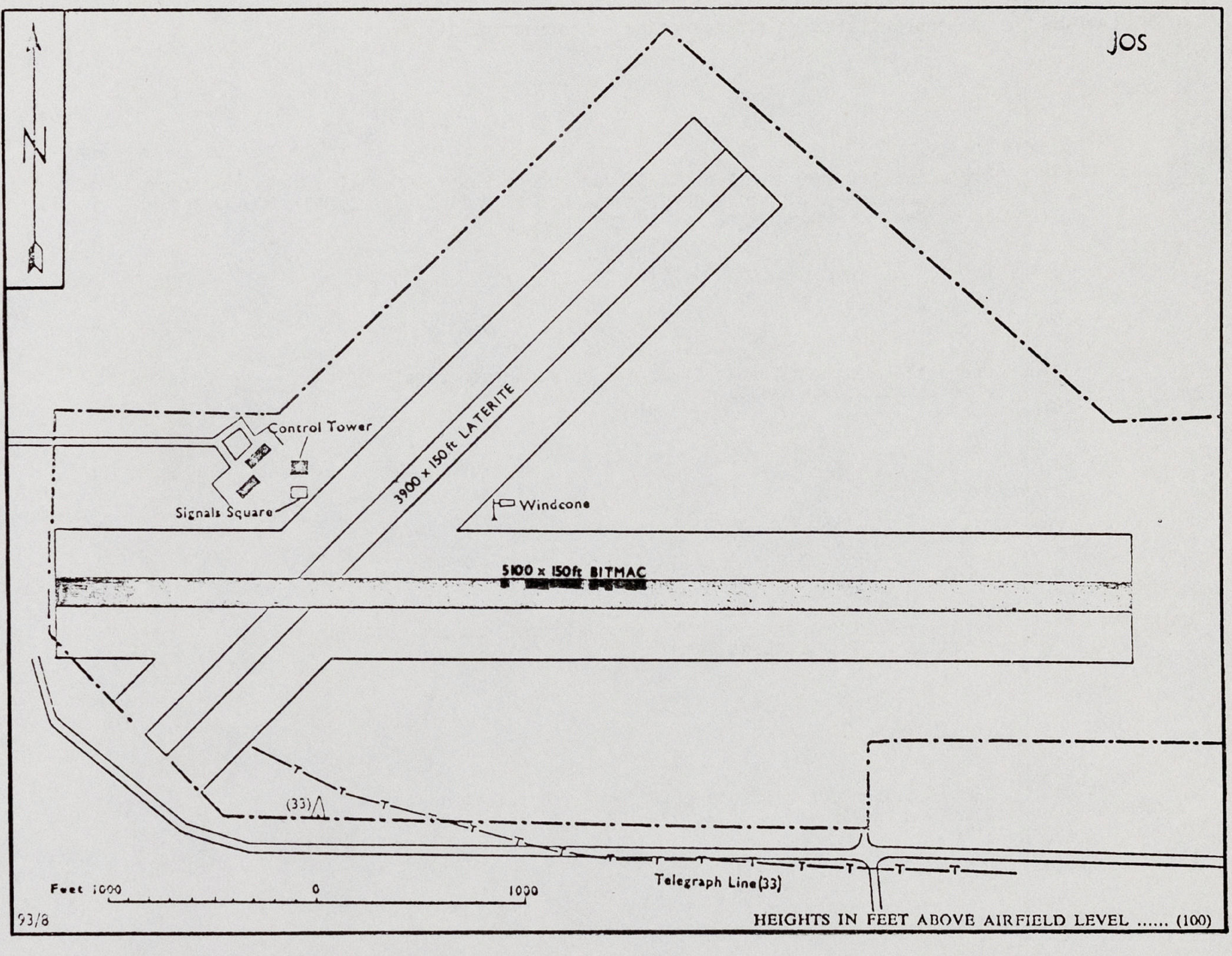
ISSUE DATE: September 1968

COUNTRY	NIGERIA	JOS
MAP REFERENCES	• GSGS 4695 (1:1,000,000) sheet 784 Edition 1	**BE:** 09° 52'N 08° 54'E **ELEV:** 4,250 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	Situated on a plateau, approximately 3 nm SSE of Jos and 2 nm E of the Bukuru/Jos main road and railway. 4 nm NE of Bukuru. Surrounding country, hilly with rocky outcrops and sparse vegetation.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Peak height		5,841	NE at approx 9.25 nm.
Masts	50		NW off boundary.

Overhead power cable (33 ft) along S boundary. Low hills surround airfield rising to a peak height as above within 10 nm.



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR –
E/W	277°/097°	5,100 x 150	Bitmac	LCN17 (h10)	4250	-51
NE/SW	233°/053°	3,900 x 150	Laterite	ESWL 20,000 lbs at 60 psi	4238	-39

Additional information: In regular use by DC3 aircraft. Grass shoulders 220 ft wide on each side of both runways.

•Co-ordinates and Local Position are taken from this sheet

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Irregular in shape with one bitmac runway and one prepared strip. Off runways - grass surface with natural drainage, liable to become soft in rainy season.
DAY MARKINGS AND WIND IND.	Side and corner markings. Signals square. Windcone on NE side of intersection.
TAXI-TRACKS TARMACS AND DISPERSALS	Parking area (600 x 300 ft) including bitmac apron (170 x 80 ft) adjacent to 05/23 runway.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	Gooseneck flarepath for emergency. Obstruction lights.
FUEL STORAGE	Avgas and jet fuel available. Storage comprises 5,000 gall underground tank plus barrels. Average stocks, Avgas 5,5000 galls; jet 1,300 galls. Refuel by bowser. Avgas 50 gpm, jet 25 gpm (hard pump).
HANGARS WORKSHOPS POWER SUPPLY ETC.	One small hangar suitable light a/c only. Minor repairs. Fire fighting equipment.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Terminal building and control tower. Administrative building. Telephone. Telegraph at Jos.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Accommodation for Airfield staff only. Hotel at Jos. Water available.
AMMUNITION STORAGE	
ACCESS:- ROAD	Access road on S side of A/F leads to the Jos/Bukuru road.
RAIL	
WATER	
OPERATORS AND USERS	Ministry of Transport (Aviation Division) Nigeria Airways
METEOROLOGICAL INFORMATION	Met office at airfield. *Aerodrome reference temperature:* 27.5°C. *Prevailing winds:* NE November to March; SW April to October. *Rainy season:* April to October. *Visibility:* Subject to reduction by early morning fog, especially in rainy season and harmattan haze in dry season.
REMARKS	This civil airfield was used by the Royal Air Force during World War II as a staging post to the Middle East. Since then it has been improved and used by Nigeria Airways on scheduled domestic services.

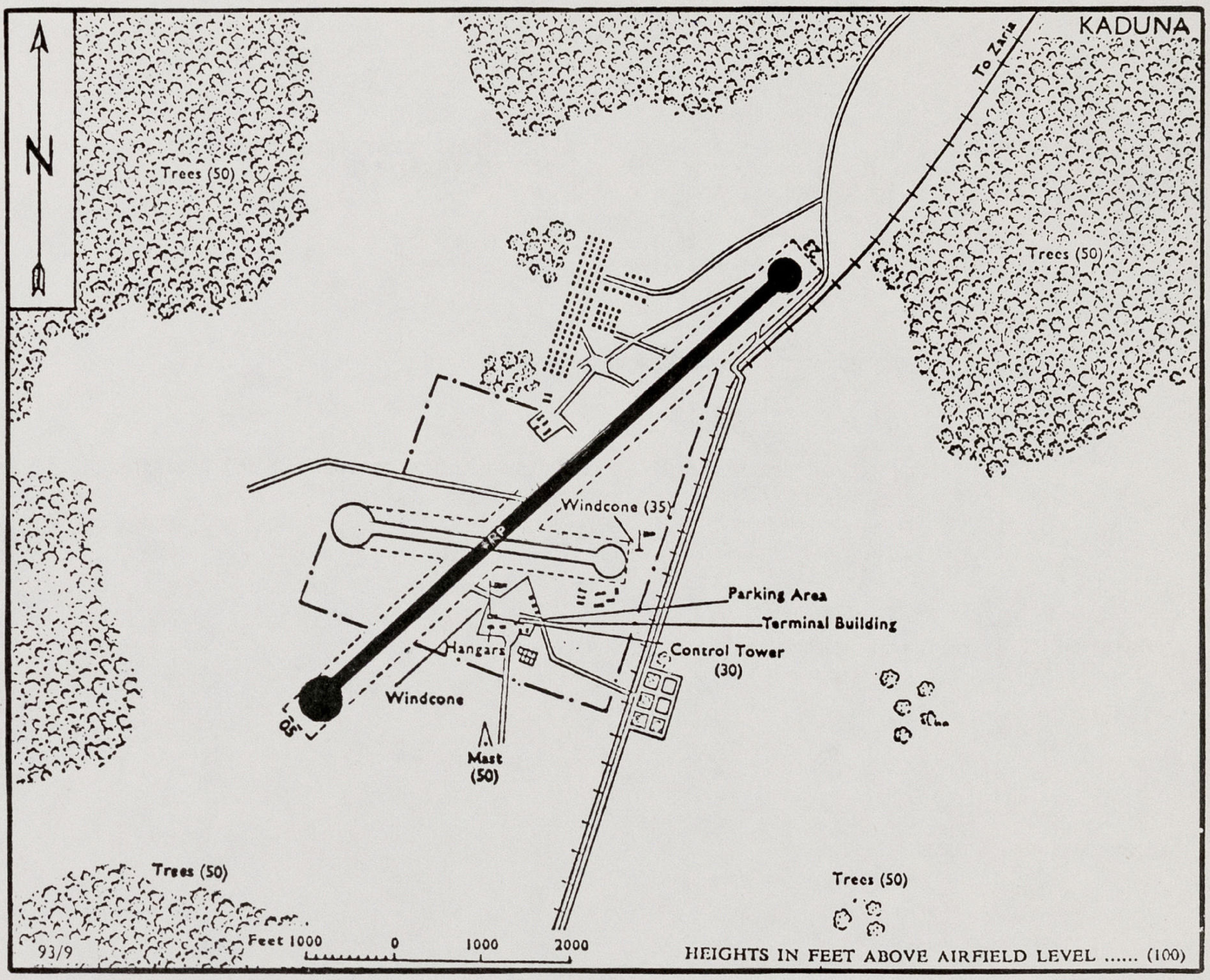
ISSUE DATE: December 1969
AL.1

COUNTRY	NIGERIA	KADUNA
MAP REFERENCES	• G504 (1:250,000) Sheet NC32-5 Edition 2	**BE:** 784 8003 10° 36' N 07° 27' E **ELEV:** 2,126 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	Approximately 4.5 nm N of Kaduna, just W of the main road and railway from Kaduna to Zaria. The River Kaduna lies 2.25 nm to the SE. Surrounding country, undulating scrub land.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Buildings			NNE at approx 2,100 ft
Mast	35		E at approx 1,650 ft
Control tower	30		S at approx 900 ft
Mast	50		S at approx 2,100 ft
Masts	150		S:at2.6 nm
Mast		2,265	N: 1 nm

Scattered trees (50 ft) on all sides. Pole line along railway off E boundary.



RUNWAYS AND STRIPS

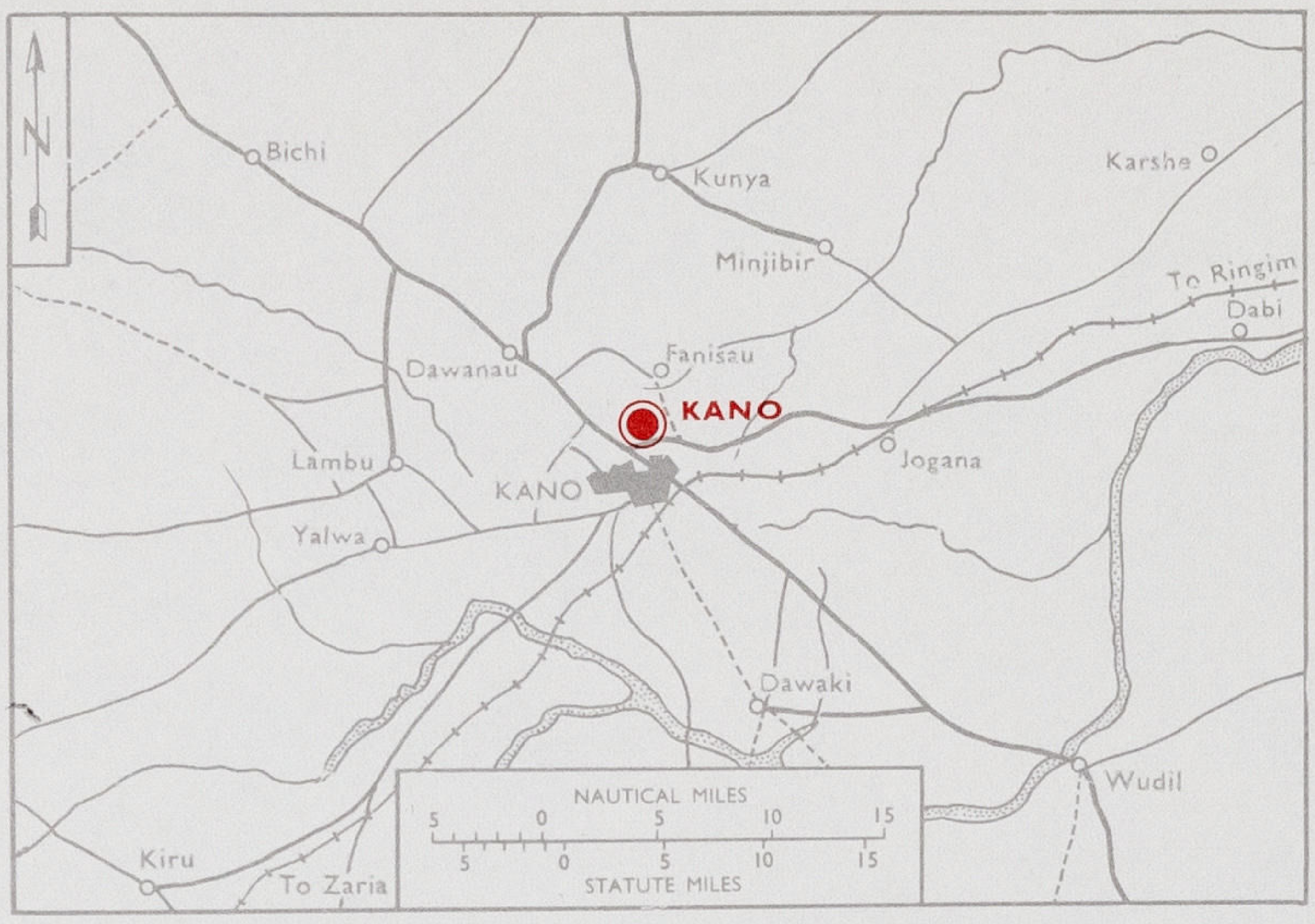
DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR -
NE/SW	234°/054°	7,600 x 150	* Bitmac			
E/W	285°/105°	3,300 x 150	Laterite			

Additional information: In regular use by Nigerian Airways Viscount and F-27 aircraft. NE/SW runway lengthened and surfaced with bitmac in 1967. 150 ft grass shoulders each side of runways. Main runwaysreported suitable for use by NAF IL 28 jet light bomber a/c.

*The 1,000 ft extension is well built but original 6,600 ft is reported to have poor foundations. Bitmac surface is thin and peels with use.

•Co-ordinates and Local Position
are taken from this sheet

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Irregular in shape with one hard surfaced runway and one prepared strip. Off strips - grass surface with underground drainage system.
DAY MARKINGS AND WIND IND.	Side, corner and threshold markings. Signals area. Windcone in front of control tower on S side of intersection.
TAXI-TRACKS TARMACS AND DISPERSALS	Bituminised taxiway (70 ft wide) from NE/SW R/W to bitmac parking apron (660 x 660 ft) in front of terminal building.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	Runway lighting on 05/23 (low intensity). Gooseneck flares for emergency.
FUEL STORAGE	Avgas and jet fuel available. One 5,000 gall underground tank plus barrel storage. Average stocks Avgas 3,000 galls ; jet 3,000 galls. Refuel by bowser, 50 gpm both Avgas and jet.
HANGARS WORKSHOPS POWER SUPPLY ETC.	1 new NAF Hangar (dimensions not known) 2 small hangars. Minor repair facilities. Fire and crash equipment. Power supply. New Control tower and terminal building housing operations and training facilities for NAF.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Telephone, telegram and teletype.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Rest houses at Kaduna. Water available.
AMMUNITION STORAGE	
ACCESS:- ROAD	Access road on E side of A/F leads onto the main Kaduna/Zaria road.
RAIL	Railway station at Kaduna, which is on the Zaria/Port Harcourt line.
WATER	
OPERATORS AND USERS	Nigeria Airways and Nigerian Air Force.
METEOROLOGICAL INFORMATION	Met. office at A/F. *Prevailing winds:* NE November to April. SW May to October. *Rainy season:* April to November. *Visibility:* Subject to harmattan haze November to April. *Aerodrome reference:temperature:* 30.5°C.
REMARKS	This airfield was in use as a civil field in 1936. It was enlarged and improved during World War II by the Royal Air Force and used as a staging post. It is now in regular use by Nigeria Airways and Nigerian Air Force for training purposes. The Federal Government used this base for air attacks against the Eastern Region. In 1968 it was reported that the airfield will eventually be developed as one of the NAF main bases.



KANO

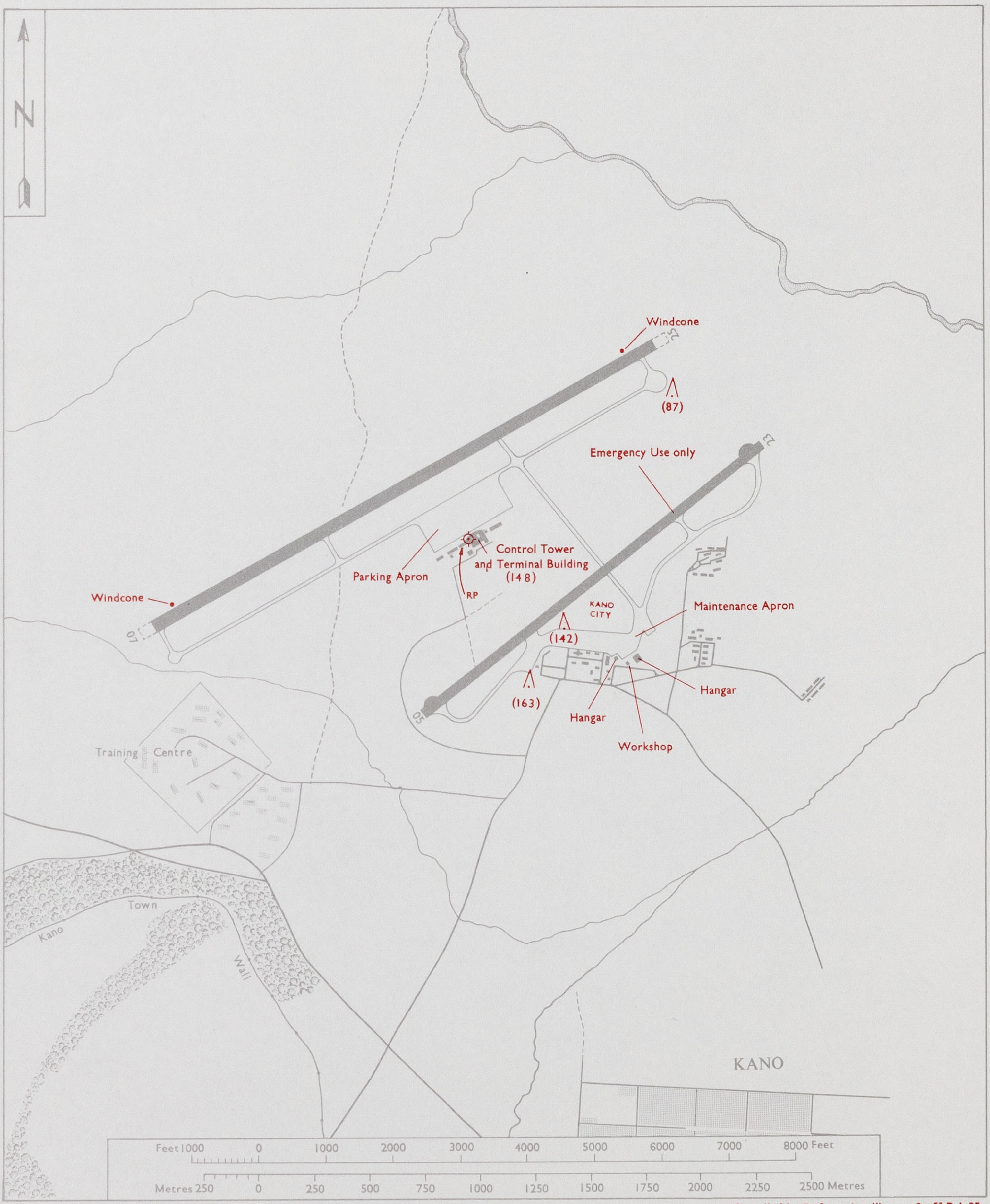
NIGERIA

12° 03′ N.
08° 32′ E.

ELEVATION 1563 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



93/10 FIRST EDITION SEPTEMBER 1968

Compiled by Defence Intelligence Staff D.I. 35

ISSUE DATE: September 1968

COUNTRY	**NIGERIA**	**KANO**
MAP REFERENCES	*GSGS 4695 (1:1,000,000) Sheet 693 Edition 2	12° 03' N 08° 31' E **ELEV:** 1,563 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

2.5 nm N of Kano, just N of the main E/W road.
Surrounding country, undulating with scattered bush.

A/F REF. POINT

Control tower.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Mast		1,565	NE: 4,000 ft
Control tower		1,633	E: 1,750 ft
Masts		1,645	ESE: 5,000 ft
Mast		1,990	SE: 4.5 nm
Mast		1,863	SW: 3.3 nm
Mast	72	1,635	WSW: 3,400 ft beyond end of runway.

Fence along NW side of ENE/WSW runway.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
ENE/WSW	246°/066°	8,610 x 200	Asphalt	LCN 55 (40,000 ESWL @ 150 lb psi)	1,526	+ 37 WSW end
NE/SW	233°/053°	6,250 x 120 (EMERGENCY ONLY)	Asphalt	LCN 20 (25,000 ESWL @ 60 lb psi)	1,518 (NE end)	+ 11 SW end

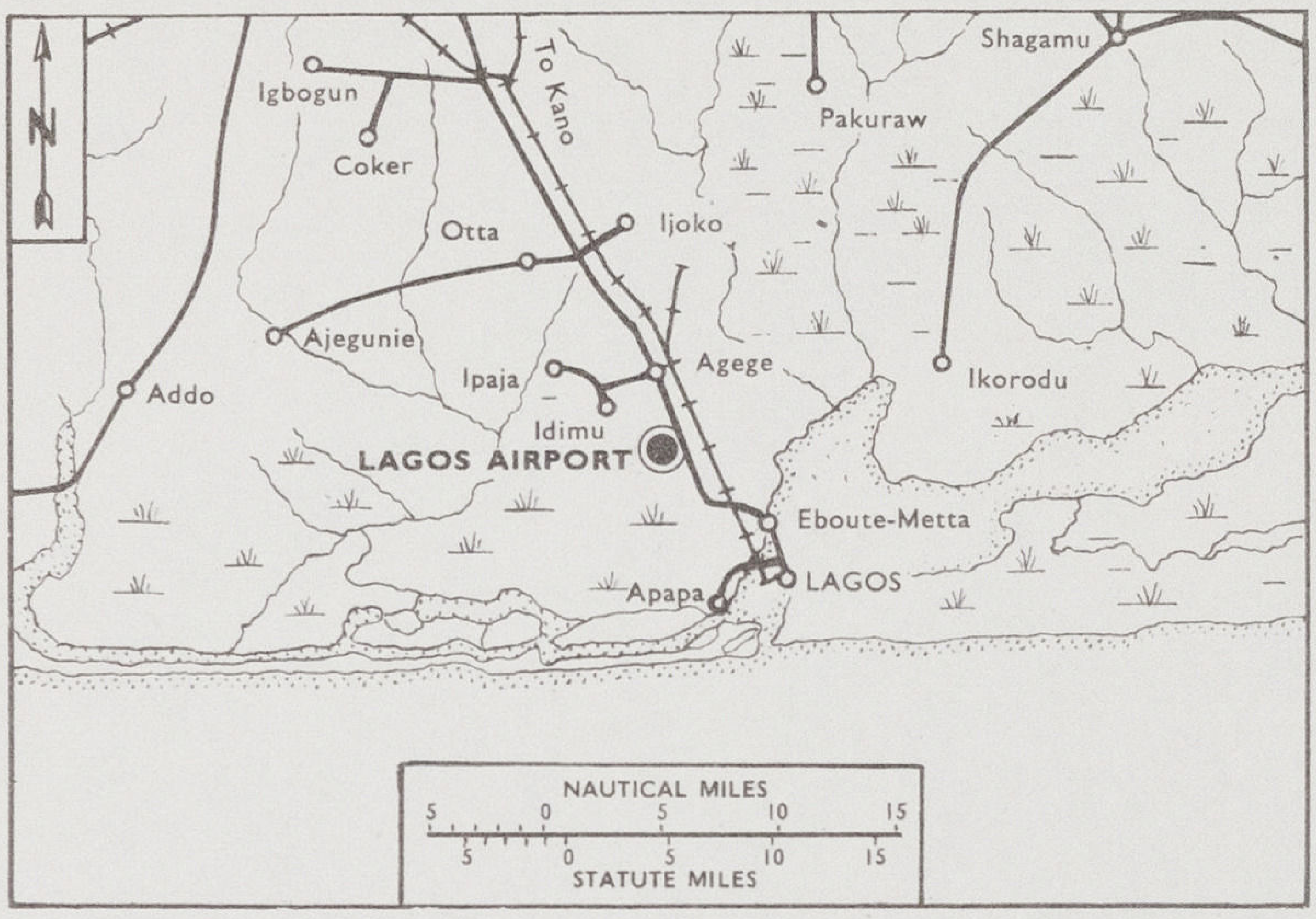
Additional information: In regular use by VC-10 and DC-8 aircraft. ENE/WSW runway; Asphalt surface on 9½" compacted laterite base and 18" compacted subgrade. 390 ft wide graded shoulders on each side of runway and 200 ft laterite overrun at each end. NE/SW runway for emergency use only (surface in poor condition). 250 ft asphalt Stopway on runway 23.

*Co-ordinates and Local Position are taken from this sheet

KANO A/F (Contd)

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	A cleared area of irregular shape with two hard surfaced runways. Sandy clay soil with natural drainage. Liable to become soft in rainy season.
DAY MARKINGS AND WIND IND.	Runway designation numerals "25" and "07"; "23" and "05". Side, threshold and axial markings on runways. Windcones at both ends of ENE/WSW runway. Words "KANO CITY" S side of smaller runway.
TAXI-TRACKS TARMACS AND DISPERSALS	Parallel taxiway on S side of ENE/WSW runway connect both ends and central portion of runway to concrete apron 6,000 x 1,000 ft in front of terminal building. Former NW/SE runway used as a taxiway connecting both runways with parking apron. The NE/SW emergency runway is also used as a taxiway. Parking area on SE side of NE/SW runway.
RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	High intensity runway lights, green threshold and approach lights on ENE/WSW runway. Obstruction lights. Blue taxiway lights. Apron floodlights. Flashing beacon (Green/White). Gooseneck flarepath. VASI.
FUEL STORAGE	Jet fuel and avgas available. Above ground fuel storage tanks. Avgas 72,000 gals. Avtur 84,000 gals. Hydrant refuelling; avgas 28 delivery points, avtur 24 delivery points. 2 x 200 gpm and 1 x 80 gpm avgas dispensers; 1 x 500 gpm, 2 x 200/250 gpm and 1 x 200 gpm avtur dispensers. Depot storage in Kano Avgas 2,286 tons, Avtur 4,069 tons. Bridging by 4 inch pipeline (1 for avgas, 2 for jet fuel). Depot supplied by rail and road from Apapa (730 miles).
HANGARS WORKSHOPS ETC.	One metal hangar 127 x 95 ft, door 80 x 19 ft. Workshops for maintenance and repairs. Stores buildings. Fire fighting equipment. Crash equipment (5 tenders, 1 rescue tender). Cargo handling facilities. Hydraulic fluid available.
OXYGEN	Oxygen (gaseous) supply available.
POWER SUPPLY	Mains power supply from Kano (230 volts, 50 cycle). 4 standby generators.

ADMINISTRATIVE BUILDINGS	Administrative building. Terminal building with control tower. Customs and immigration facilities. First aid facilities. (2 ambulances). Hospital at Kano.
DOMESTIC ACCOMMODATION	Hotel for approx 140 persons at airfield. Hotel accommodation at Kano. Restaurant.
TELE-COMMUNICATIONS	Telephone, telegraph and teletype available.
WATER	Mains supply from reservoir 3 nm distant.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	Tarmac road from Kano to the airfield. Main road from Kano to Lagos.
RAIL	Railway station at Kano. Connections with Lagos and all parts of the interior on the Nigerian railway.
WATER	
OPERATORS AND USERS	Ministry of Transport (Aviation Division). International and domestic airlines.
METEOROLOGICAL INFORMATION	Met office at airfield. Broadcasts. *Prevailing winds:* May to October, SW. November to April, NE. *Rainy season:* May to October. *Visibility:* Generally good. Subject to reductions by harmattan haze from October to May. *Airfield Reference Temperature:* 33.1°C.
REMARKS	Kano Airfield was constructed in 1935 and used in a civil capacity until the beginning of World War II, when it was developed by the Royal Air Force and used as a staging post to the Middle East. It was also used by the United States Air Force operating aircraft up to B.29 standard. Since the WWII the importance of the airfield has greatly increased and it is regularly used by international airlines.



LAGOS AIRPORT

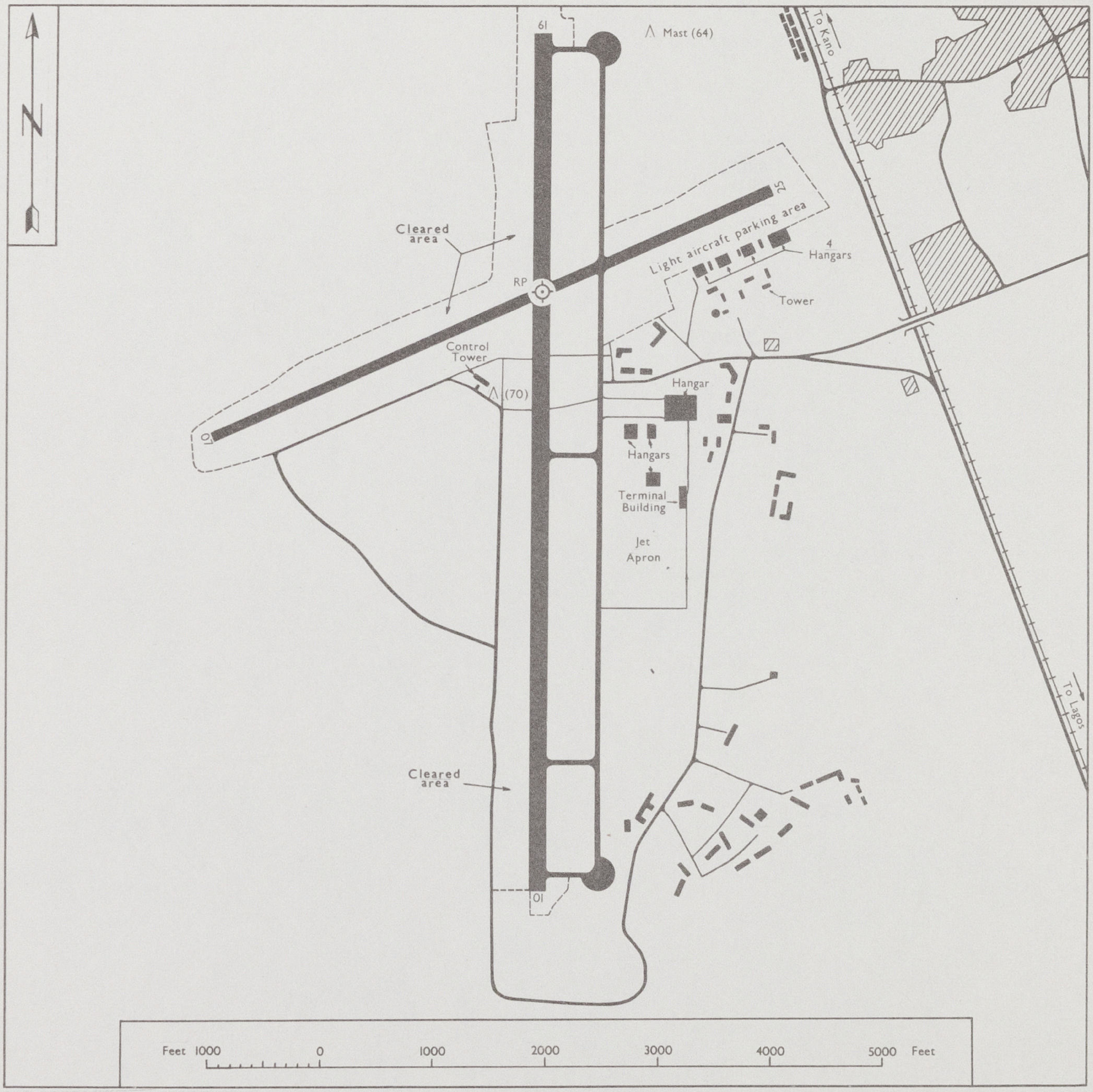
NIGERIA

06° 35′ N.
03° 20′ E.

ELEVATION 132 FT.
A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



Compiled by Defence Intelligence Staff D.I. 35

COUNTRY	**NIGERIA**	**LAGOS (IKEJA)**
MAP REFERENCES	*G 504 (1:250,000) Sheet NB-31-7 Edition 2	06° 35' N 03° 20' E **ELEV:** 132 ft
WAC/RAF CHART		**GRID REF:**

LOCAL POSITION LANDMARKS AND SURROUNDING COUNTRY

8 nm NNW of Lagos, on the W side of the Lagos/Abeokuta main road and railway. Surrounding country, flat and forest covered.

A/F REF. POINT

Intersection of runways.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Building		212	N: 1.3 nm.
Mast		196	NNE: 2,400 ft
Mast		232	SSE: 0.5 nm
Control tower and mast	75	207	SW: 705 ft
Mast		112	WSW: 600 ft beyond end of runway
Mast		154	NNW: 2,200 ft

Trees (75 ft) on all sides of airfield. Telegraph line along railway on E side.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR –
N/S	188°/008°	7,600 x 150	Asphalt	*LCN 45 (35,000 ESWL @ 130 lb psi)	132	– 33 S end
ENE/WSW	256°/076°	5,400 x 100	Asphalt	LCN 20 (25,000 ESWL @ 60 lb psi)	124	– 29 WSW end

Additional information: In use by B-707 and DC-8 aircraft. N/S runway consists of compacted laterite base of minimum 4" thickness, and surface of compacted sand and bitumen. ENE/WSW runway has 2"/5" base of compacted laterite clay surmounted by 1½"/2½" asphalt. Overrun of 200 ft at S end of N/S runway.

Extension of N/S runway to 9,000 ft, strengthening and surfacing with asphaltic concrete concrete (high grade asphalt) projected.

*Co-ordinates and Local Position are taken from this sheet

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Irregularly shaped area. Grassy laterite. Natural and artificial drainage adequate. Only prepared surfaces usable in wet weather.
DAY MARKINGS AND WIND IND.	Windcone W of runway intersection. Axial, side and boundary markings on both runways. Runway designation markings '25' and '07', '19' and '01'.
TAXI-TRACKS TARMACS AND DISPERSALS	Parallel asphalt taxi-track (75 ft wide) on E side of N/S runway connects with asphalt aprons (1) approx 550 x 225 ft (2) approx 450 x 400 ft (3) approx 400 x 650 ft (with concrete bays) (4) approx 500 x 650 ft (with concrete bays)
RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	Electric flarepath and threshold lights on N/S runway. Approach lighting to R/W 19. Goosenecks available on ENE/WSW runway. Floodlights at parking area. Obstruction lighting. Rotating beacon. Blue taxiway lights.
FUEL STORAGE	Avgas, jet fuel available. A/F storage: Avgas 24,000 IGs, Avtur at least 352,000 IGs. Hydrant refuelling 2 x Avgas, 3 x Avtur (all 150 GPM). Avgas Bowsers and trailers (300 gpm) Avtur: about 12 bowsers and trailers (pump rate from 830-250 gpm). Depot Avtur (Lagos 12 miles). Capacity 28,000 tons - normal holding 17,000 tons - bridging by road tankers - 3 hour turn round maximum 53 tons). Avgas (Apapa Depot) 380 tons, bridging by road tanker.
HANGARS WORKSHOPS ETC.	Two hangars (128 x 95 ft with door clearances 95 x 26 ft). One hangar (128 x 95 ft with door clearance 95 x 18 ft). Workshops. Repair/maintenance facilities. Engine-test-bed. Fire fighting equipment. Crash equipment (6 tenders, 1 rescue tender).
POWER SUPPLY	Power supply from Lagos (230 volts, 50 cycle). Two 20 KW diesel generators.

ADMINISTRATIVE BUILDINGS	Control tower. Terminal building and administration offices. Fully equipped hospitals at Lagos and Ikeja. First aid facilities at airfield. 2 ambulances.
DOMESTIC ACCOMMODATION	Hotel 1.7 nm from airfield (50 beds). Hotels at Lagos and Ikeja. Restaurant at airfield.
TELE-COMMUNICATIONS	Telephone, telegraph and teletype available.
WATER	Mains supply.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	Airfield situated on all-weather main road from Lagos.
RAIL	Railway station adjacent to airfield, on Lagos-Kano line. Sidings at station.
WATER	Major port facilities at Lagos.
OPERATORS AND USERS	Ministry of Transport (Aviation Division). International and domestic airlines.
METEOROLOGICAL INFORMATION	Met office available. Broadcasts. *Prevailing winds:* October - May, N to NE. June - September, S to SW. Line squalls and thunderstorms June - September. *Rainy season:* May - October. *Visibility:* Good between May and October except during rain generally moderate in other months, with frequent morning ground mist. *Aerodrome reference temperature:* 29.5°C.
REMARKS	This airfield was built in 1938, for commercial use. During World War II it was of considerable value as a staging post to the RAF, and was extensively developed. At the end of the war the airfield was taken over by the Nigerian Government, and has since been in continuous operation by domestic and international airlines. In late 1958 work commenced on the extension of the N/S runway by 1,000 ft to the S in addition to compacting, and resurfacing the existing length of runway, in order to accommodate jet aircraft. This work was completed by late 1960. In 1967 it was reported that a contract was to be put to tender for further extension and strengthening of the N/S runway to enable large jet transport aircraft using the airport to operate fully loaded.

MAIDUGURI

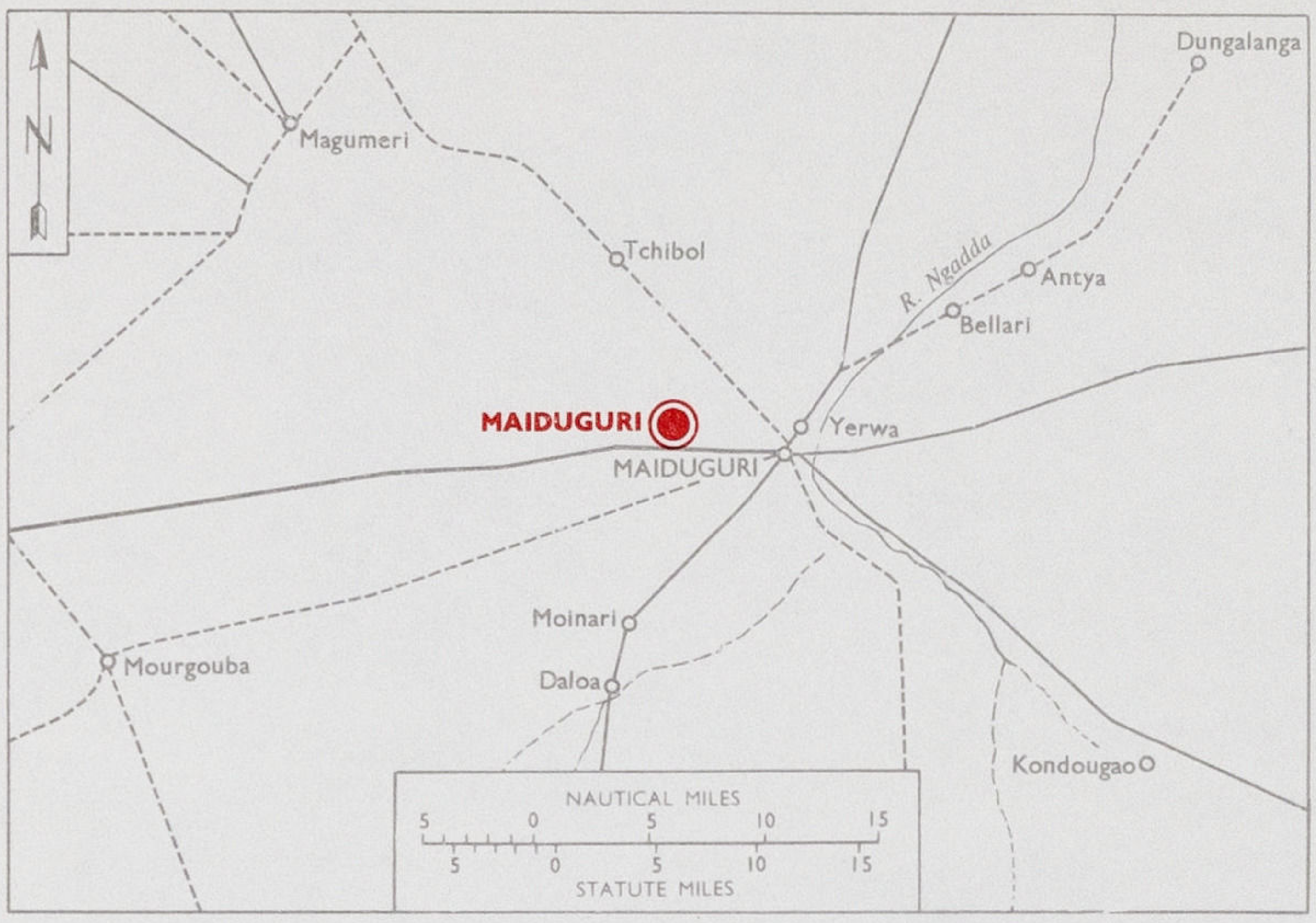
NIGERIA

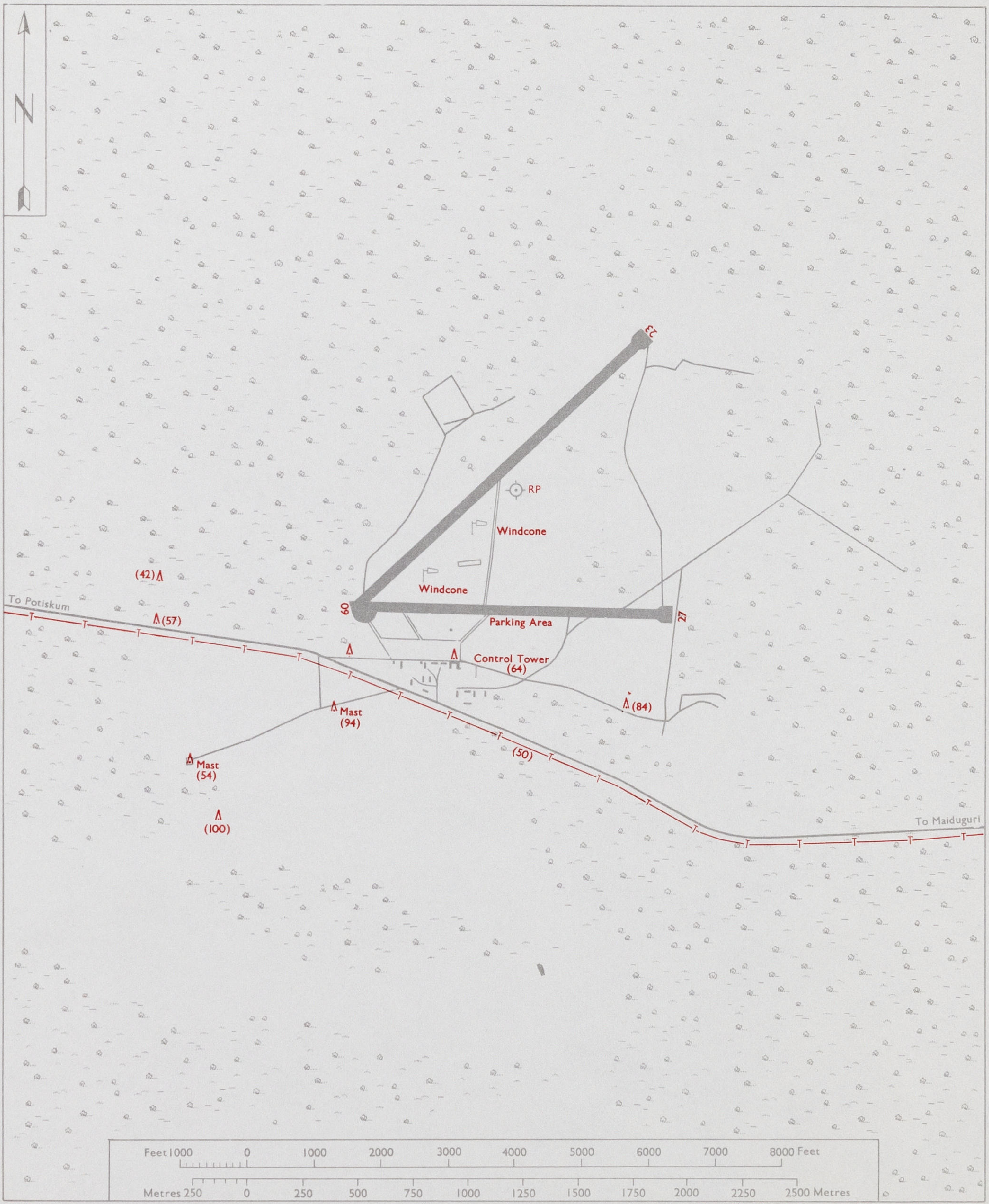
11° 51′ N.
13° 05′ E.

ELEVATION 1159 FT
AMSL

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL 480
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL.........(100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.




N
23
RP
Windcone
Windcone
(42)
To Potiskum
(57)
09
Parking Area
27
Control Tower
(64)
Mast
(94)
(84)
(50)
Mast
(54)
(100)
To Maiduguri
Feet 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 Feet
Metres 250 0 250 500 750 1000 1250 1500 1750 2000 2250 2500 Metres

Compiled by Defence Intelligence Staff D I. 35

ISSUE DATE: December 1969
AL.1

COUNTRY	**NIGERIA**	**MAIDUGURI**
MAP REFERENCES	• GSGS 4695 (1,000,000) Sheet 785 Edition 1	11^{0} 51' N 13^{0} 04' E **ELEV:** 1,162 ft
WAC/RAF CHART		**GRID REF:**

LANDMARKS AND SURROUNDING COUNTRY

In NE Nigeria about 275 nm E of Kano. 5.2 nm W of Maiduguri town on N side of road Maiduguri-Potiskum-Kano.
Surrounding country flat with scattered scrub.

A/F REF. POINT

Intersection of runways.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Water tower	63		ESE: 3,900 ft
Control tower	43		ESE: 1,275 ft
Masts	73		SW: 2,100 ft
Mast	33		SW: 2,700 ft

Overhead cable (28 ft) along road bordering S side of airfield.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS	ELEV. (FEET)	SLOPE + OR −
NE/SW	$235^{0}/055^{0}$	6,000 x 150	Bitmac	LCN 38 (30,000 ESWL @ 85 lbs psi)	1,150	+ 5 SW end
E/W	$280^{0}/100^{0}$	4,800 x 150	Bitmac	LCN (25,000 ESWL @ 85 lbs psi)	1,159	− 4 W end

Additional information: Turning areas at all runway ends. Laterite overruns of 1,500 ft at both ends of E/W runway, and of 750 ft at N and S ends of NE/SW runway respectively. Runway 05/23 resurfaced September 1968. Used by F.27 on domestic services.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE

Irregularly-shaped area orientated approximately N/S and E/W with two hard surfaced runways intersecting at SW and W ends respectively.
Off runways - grass covered sandy surface. Natural drainage.

DAY MARKINGS AND WIND IND.

Side markings on runways and taxi-tracks. Axial-markings on former. Lead-in-markers. Signals square. Runway designation markings "23" and "05", "27" and "09". Windcones 1,200 and 2,700 ft NE of runway junction. Name "MAIDUGURI" inscribed in white in angle formed by runways.

TAXI-TRACKS TARMACS AND DISPERSALS

Three short asphalt taxi-tracks from west section of E/W runway to asphalt parking area (1,050 x 210 ft) immediately SE of runway junction. Taxi-track from E section of E/W runway, with 5 hardstandings, to parking area.

• Co-ordinates and Local Position are taken from this sheet

RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	Gooseneck lighting on both runways on request. Taxi-track lighting. Obstruction lights.
FUEL STORAGE	Jet fuel and avgas available. Drum storage. Average holding Avgas 2,500 galls; jet 350 galls. Rate of flow; avgas 50 gpm (diesel pump); jet 25 gpm (hand pump). Refuelling by bowser. Maiduguri depot reported closed. (1958 reported 39 x 4,000 gall underground tanks not in use). Re-supply. Kano.
HANGARS WORKSHOPS POWER SUPPLY ETC.	2 Lister generators (230 volt) at airfield. Fire fighting equipment. Crash equipment (1 mobile tender with rescue gear). Cargo handling facilities.
ADMINISTRATIVE BUILDINGS	Control tower ESE of runway junction. Administrative offices. Passenger shelter. First aid facilities at airfield. Hospital in town. Customs and immigration service.
DOMESTIC ACCOMMODATION	Rest house (20 persons) at airfield. Government rest house at town. Restaurant.
TELE-COMMUNICATIONS	Telephone at airfield. Telegraph in town.
WATER	Well at airfield. Overhead water tower.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	Tarmac and laterite road from airfield to Maiduguri. Occasionally unserviceable in wet weather.
RAIL	Railway terminus from the S.
WATER	
OPERATORS AND USERS	Ministry of Transport (Aviation Division). Domestic airline.
METEOROLOGICAL INFORMATION	Met. office at airfield. *Aerodrome reference temperature:* 33.9°C. *Prevailing winds:* May-October, SW. November-April, NE. Line-squalls occur between May and October. *Rainy season:* May-October. *Visibility:* Generally good during rainy season except when raining, and indifferent from October to May.
REMARKS	In 1936 this airfield was used by Imperial Airways. Rapid development by the RAF took place in 1941 and throughout World War II the airfield served as an important link on the supply and reinforcement unit to the Middle East, being used both by the RAF and the USAF. The Nigerian Government assumed control in 1945 and the airfield has since been in continuous use by civil aircraft.

CONFIDENTIAL

ISSUE DATE: September 1968

COUNTRY	NIGERIA	MAKURDI
MAP REFERENCES	• GSGS4695 (1:1,000,000) sheet 815 Edition 1	**BE:** 815 8005 07° 42'N 08° 38'E **ELEV:** 371 ft
WAC/RAF CHART		**GRID REF:**

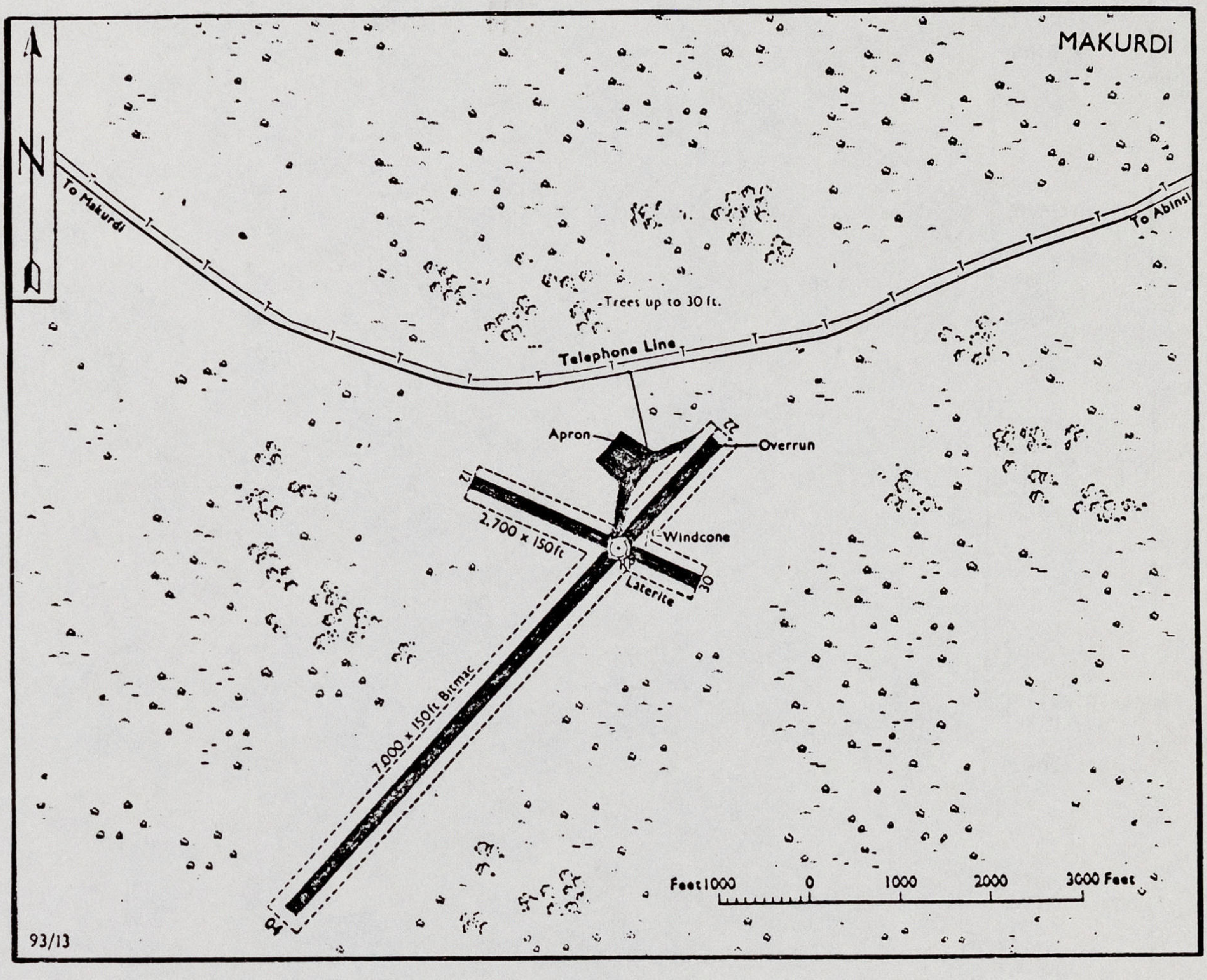
LANDMARKS AND SURROUNDING COUNTRY

170 nm N of Calabar 5 nm ESE of Makurdi, immediately S of the Makurdi/Abinsi secondary road.
The River Benue flows E/W about 1.75 nm to the N.
Surrounding country, undulating scrub and orchard bush area.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Water tower	150		WNW at approx 5 nm.

Pole line along road just N of landing ground. Trees up to 30 ft in vicinity.



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NE/SW	229°/049°	7,000 x 150	Bitmac	See below		
WMW/ESE	121°/301°	2,700 x 150	Laterite			

Additional information: NE/SW runway extended to 7,000 ft and surfaced with bitmac in 1967. NAF IL28 jet light bombers use. It is reported to be in use as a NAF jet pilot training base. Laterite strip liable to become soft after heavy rain.

• Co-ordinates and Local Position are taken from this sheet

CONFIDENTIAL

MAKURDI (Contd)

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	An irregularly shaped area with one hard surfaced runway and one prepared strip. Off strips - grass surface with natural drainage, liable to become soft in rainy season.
DAY MARKINGS AND WIND IND.	Strip markings. White circle. Signals square. Name "MAKURDI" inscribed in white. Windsock on W side of strip intersection.
TAXI-TRACKS TARMACS AND DISPERSALS	Taxiways (approx 60 ft wide) from strip intersection and NE end of NE/SW R/W lead to bitmac parking apron (450 x 300 ft) on N side.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	
FUEL STORAGE	Avgas and jet fuel available. Drum storage. Refuel by bowser.
HANGARS WORKSHOPS POWER SUPPLY ETC.	
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Tower and stores building near apron. Telephone at Airfield. Telegraph at Makurdi.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Domestic accommodation at Makurdi. Water available from well. Medical services.
AMMUNITION STORAGE	
ACCESS:- ROAD	The Makurdi/Abinsi secondary road lies immediately N of the airfield. Main PORT HARCOURT road lies 3 nm W of airfield.
RAIL	Makurdi railway station lies on the Port Harcourt/Kano line.
WATER	River Benue is navigable.
OPERATORS AND USERS	Ministry of Transport (Aviation Division). Nigeria Airways. NAF
METEOROLOGICAL INFORMATION	Met station at Makurdi. *Prevailing winds:* SW April to September. NE October to March. *Rainy season:* April to October. *Visibility:* Subject to early morning fog due to close proximity to Benue river.
REMARKS	The construction of this airfield started in the early part of World War II, but was not completed. It was later developed for civil use and has been available since 1946, being in regular use by Nigeria Airways on domestic services. The NE/SW runway was extended and surfaced in 1967 and the airfield is used by NAF as a jet pilot training base. IL 28 jet light bomber a/c also use the airfield. It is reported that eventually Makurdi will be one of the main Nigerian Air Force bases.

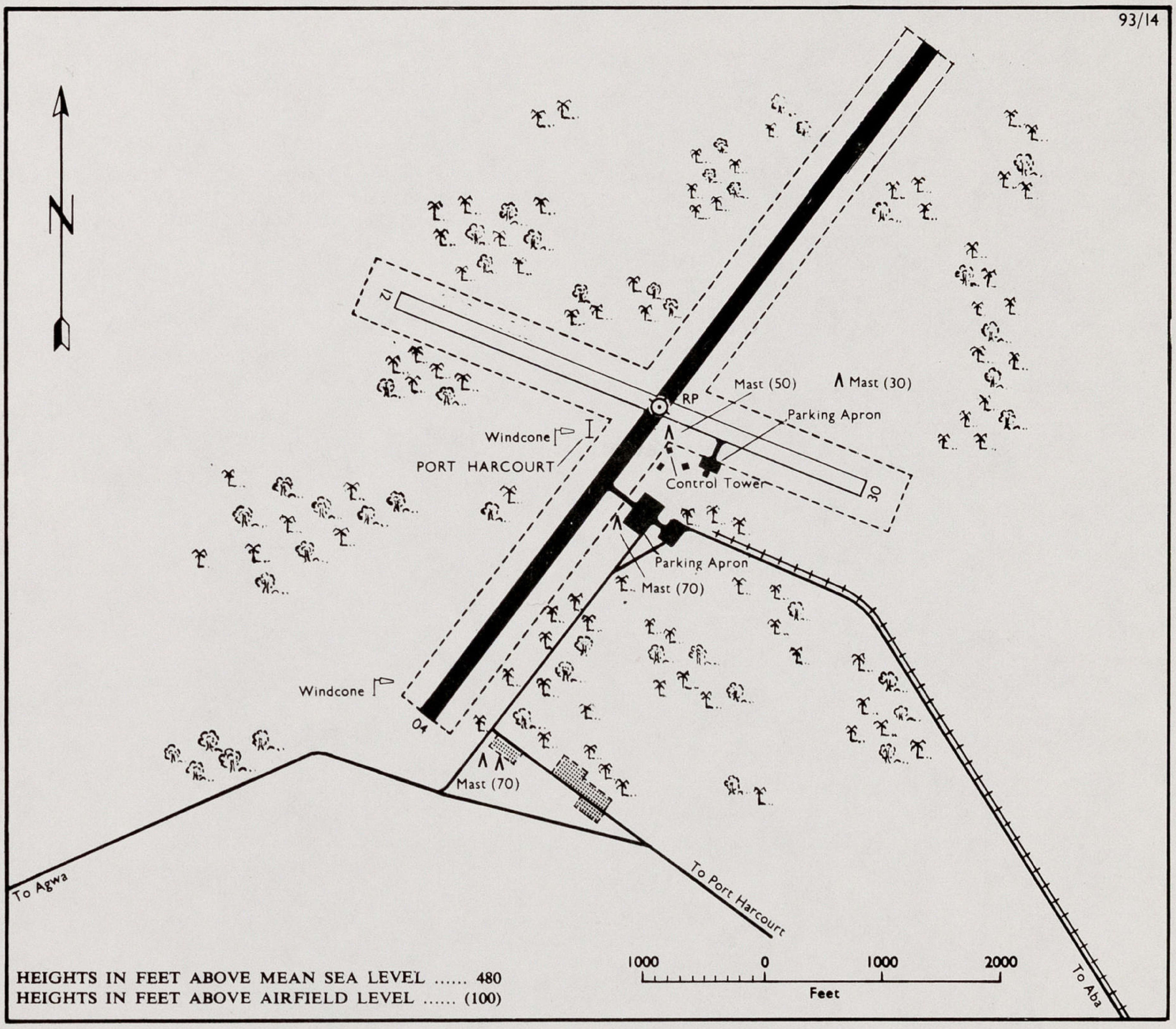
ISSUE DATE: December 1969
AL.1

COUNTRY	NIGERIA	PORT HARCOURT
MAP REFERENCES	• GSGS 4695 (1:1,000,000) Sheet 815 Edition 1	**BE:** 815-8008 04^0 51' N 07^0 01' E **ELEV:** 61 ft
WAC/RAF CHART		**GRID REF:**
LANDMARKS AND SURROUNDING COUNTRY	4.3 nm N of Port Harcourt, on N side of road to Aba. The Port Harcourt/Aba railway extending NE/SW lies about 1.7 nm E of the landing ground. Wooded surrounding country with numerous creeks.	

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Masts	50		S: 600 ft
Masts	30		E: 1,500 ft
Masts	70		S: 1,200 ft
Masts	70		SSW: 3,300 ft
Mast	310		S: 6 nm

Trees (100 ft) on all sides.



RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS)	ELEV. (FEET)	SLOPE + OR −
NE/SW	$223^0/043^0$	*7,000 x 150	Asphalt and concrete	*LCN18		
NW/SE	$123^0/303^0$	4,200 x 150	Grass on Laterite	15,000 lbs ESWL at 50 psi		

Additional information: In regular use by F-27 aircraft. 1,500 ft clear way at all extremities; 600 ft overruns. NW/SE strip extendible. Also used by MIG-17 aircraft Nov. 1969.

* 1,000 ft concrete extension at NE end constructed in 1969. Remaining 6,000 ft resurfaced with asphalt.

•Co-ordinates and Local Position are taken from this sheet

PORT HARCOURT (Contd)

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE	Two intersecting cleared areas with one bitmac runway and one laterite strip. Off runway - grass on laterite clay soil with artificial and natural drainage.
DAY MARKINGS AND WIND IND.	Name "PORT HARCOURT" inscribed near intersection. Side and threshold markings on runway and strip. Designation markings "22" and "04": "12" and "30". Two windcones.
TAXI-TRACKS TARMACS AND DISPERSALS	Short bitmac taxiway (60 ft wide) lead from the E side of the NE/SW runway to a bitmac parking apron (approx 300 x 150 ft). Bitmac taxiway from NW/SE runway leads to a small parking area (approx 150 x 50 ft) adjacent to the control tower.
RADIO AIDS	R/T and W/T contact. Homing facilities.
NIGHT LANDING	Emergency gooseneck flares.
FUEL STORAGE	Avgas and jet fuel available. Bulk storage capacity, Avgas 12,000 galls, jet 12,000 galls. Average holdings, Avgas 8,000 galls. Jet 8,000 galls. Hydrant refuelling Avgas 100 gpm jet 100 gpm. Resupply by road tanker from Port Harcourt.
HANGARS WORKSHOPS POWER SUPPLY ETC.	Fire fighting equipment (1 foam tender). Crash equipment. Oxygen. Hydraulic fluids available.
ADMINISTRATIVE BUILDINGS AND TELECOMS.	Control tower. Administrative building.
DOMESTIC ACCOMMODATION AND WATER SUPPLY	Hotel at Port Harcourt.
AMMUNITION STORAGE	
ACCESS:- ROAD	All-weather road from landing ground to Port Harcourt.
RAIL	Terminus at Port Harcourt of lines to Kaduna, Kano, and Lagos. Spur line to airfield.
WATER	Minor port facilities at Port Harcourt.
OPERATORS AND USERS	Ministry of Transport (Aviation Division). Nigeria Airways.
METEOROLOGICAL INFORMATION	Met. office available. *Aerodrome reference temperature:* 28.8°C. *Prevailing winds:* October-May, N to NE. June-September, S to SW. Line-squalls and thunder-storms between June and September. *Rainy season:* May-October. *Visibility:* Good between May and October except during rain. Generally poor in other months with frequent morning ground mist.
REMARKS	During World War II this airfield was controlled by the RAF, probably in the role of an emergency landing ground, and later as a staging post. In 1945 it was taken over by the Nigerian Government and has since been in regular use by the domestic airline. Used by Federal Forces for re-supply operations.

NIGERIA

APPENDIX 'A' - FORMER LANDING GROUNDS AND ALIGHTING AREAS

The following list includes (a) landing grounds previously reported but believed to have been abandoned and no longer usable, and (b) flying-boat alighting areas not in use and with no facilities.

NAME AND CO-ORDINATES	LOCAL POSITION	DIMENSIONS AND SURFACE	REMARKS
AGBABOU 07° 20' N 06° 00' E	About 3.5 nm N of Agbabou village	1,200 x 150 ft. Grass	Formerly ELG. Closed August 1951
AREGE 13° 26' N 13° 20' E	3 nm SW of Arege	Below 2,000 ft. Natural	Reported available 1960. No subsequent information
BAISSA 07° 16' N 10° 05' E	3 nm W of Baissa	2,000 ft. Natural	Reported available 1960. No subsequent information
BONNY 04° 26' N 07° 10' E	On an island 21 nm SSE of Port Harcourt	1,200 x 90 ft. Earth	Shell-BP LG closed March 1964
CALABAR FBAA 04° 58' N 08° 19' E	On Calabar River, 0.5 nm NW of town	18,000 ft	Formerly Customs alighting area
EPE FBAA 06° 37' N 03° 57' E	Off Epe, about 34 nm E of Lagos A/F	18,000 ft	Formerly diversion point for Lagos FBAA
DAURA 13° 03' N 08° 18' E	0.5 nm NW of Daura	1,650 x 240 ft. Laterite	No information since 1942
FORCADOS FBAA 05° 21' N 05° 30' E	On Forcados River, just N of Burutu	15,000 x 2,000 ft	No information of former use
GURE 10° 22' N 08° 25' E	Reported 59 nm E of Kaduna 1.5 nm NW of Gure	2,500 ft x 100 ft	No information since 1961
HACHIA 08° 42' N 06° 16' E	Adjacent NE of Eggan	Over 2,000 ft.	Reported available 1960. No subsequent information
KACHIA 09° 52' N 07° 58' E	1.6 nm ESE of Kachia, 51 nm SE of Kaduna	2,000 x 300 ft. Earth	Reported closed 1961/62
KANO SOUTH 11° 57' N 08° 29' E	3.5 nm SW of Kano	6,000 x 150 ft Laterite	Former alternative to Kano A/F. Closed July 1953
LAGOS/APAPA 06° 26' N 03° 22' E	Just SW of Apapa point	3,600 x 150 ft. 1,950 x 150 ft. Laterite	Former well-equipped civil A/F. Replaced by Ikeja A/F 1946

NAME AND CO-ORDINATES	LOCAL POSITION	DIMENSIONS AND SURFACE	REMARKS
LAGOS APAPA FBAA 06° 26' N 03° 23' E	In Lagos River, just S of Apapa	12,000 x 15,000 ft	Formerly RAF base, earmarked for use by "Princess" Flying Boats
LAGOS LAGOON FBAA 06° 27' N 03° 24' E	SW part of Lagos Lagoon, 2.5 nm NE of Lagos	20,000 x 15,000 ft	Former RAF Flying Boat Base, reported as an emergency anchorage 1954
SOKOTO (OLD) 13° 02' N 05° 17' E	1 nm SE of Sokoto	2,400 x 1,800 ft. Natural surface	Replaced by new LG in 1942

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VII. SIERRA LEONE

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SIERRA LEONE

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCE	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
BO (0818-8016) 07° 57' N 11° 46' W 330 ft Series GSGS 4695 2nd Edition Sheet No. 818	2 nm SW of Bo. Just West of Bo/Tikonka road. River Sewa lies 6 nm SE	NNE/SSW (225°/045°M) 4,200 x 150 ft. Laterite. 100 ft overruns each end. Used by DC.3 a/c. Parking apron adjacent to E side	R/T homing facilities. Avgas - 2,000 gal tank plus some drum storage - Refuelling by bowser. 100,000 sq ft laterite apron (DC.3). Fire and crash equipment. Small terminal building. Control tower. Telephone and telegraph. Limited accommodation in Bo	Civil airfield. Built in 1942 for military use. Taken over by civil authorities after WWII and now in regular use by Heron a/c of Sierra Leone Airways
BOAJIBU 08° 11' N 11° 21' W 350 ft Series G504 1st Ed. Sheet NC 29-13 UTM Grid: RQ 500460	.5 nm W of Boajibu 1 nm E of River Sewa	N/S 1,665 x 90 ft Beaver and Cessna 310 a/c. 5,100 lbs AUW under worst conditions	None	Private. Diamond Corporation strip
BONTHE (818-8801) 07° 32' N 12° 30' W 14 ft Series GSGS 4695 2nd Ed. Sheet No.	On Western outskirts of Bonthe on Sherbro Island	NW/SE (160°/340°) 3,700 x 90 ft. Bitumen sealed, compacted sand. LCN 25 (approx). Suitable DC.3 a/c	Very limited facilities. Hand fire fighting equipment	Originally (1949) private airfield, taken over by civil authorities 1950s. Improved 1961 onwards. In use 1967. Now in regular use by Heron a/c od Sierra Leone airways

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SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCES	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
DARU (0818-8017) 07° 59' N 10° 51' W 700 ft Series GSGS 4695 2nd Edit. Sheet No. 818	On W bank of River Moa, 1.5 nm W of Daru town	NW/SE (140°/320°M) 2,300 x 150 ft. Grassed laterite; overrun 100 ft/150 ft S/N ends respectively. Strip slopes down from NW end - one way ops. (land 32; T/O 14). Twin Pioneer a/c have used (AUW 14,000 lbs)	Terminal building. Water and limited accommodation in nearby Army barracks	Civil airstrip - first reported 1938. Has been used by domestic airline but now classed emergency or occasional use airstrip
FREETOWN/HASTINGS (0780-8027) 08° 24' N 13° 08' W 60 ft Series G504 2nd Ed. AMS Sheet NC 28-16 UTM Grid GE 052286	8 nm SE of Freetown 1 nm NE of Hastings on the NE side of Freetown/Waterloo railway	E/W (270°/090°M) 3,150 x 50 ft Asphalt. Suitable for DC.3 a/c ESWL 14,000 lbs at 50 lb psi. Mountains seriously obstruct approach from West	R/T and W/T. Fuel storage: 5,000 gals AVGAS (2 tanks), Hangar 125 x 90 x 25 ft. New hangar to house 2 DC.3 aircraft. Hardstanding (surface deteriorating) for up to 3 Heron a/c. Control and Admin building. Limited fire fighting equipment. Telephone. Telegraph service and accommodation in Freetown	Used by RAF and US Ferry Commands in WWII. After war, retained on care and maintenance basis. Later re-opened as civil airfield. R/W resurfaced 1961 but now (1968) showing signs of wear
FREETOWN/LUNGI (0780-8018)	See Information Sheet and Plan			
GBANGBATOK (0818-8055) 07° 48' N 12° 23' W 75 ft Series GSGS 4695 2nd Ed. Sheet 818	19 nm West of Sengima 65 nm SE of Freetown	NE/SW (250°/070°M) 3,750 x 250 ft Laterite. LCN 25 (est.). Suitable for DC.3 a/c. 150 ft overruns each end	Limited radio communications. Fire trailer and hand extinguisher	Civil airstrip, opened 1965, adjacent to Prime Minister's residence. Regular use by Heron a/c of Sierra Leone Airways
HASTINGS – See Freetown/Hastings above				

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KAMBIA (0780-8040) 09° 06' N 12° 55' W 120 ft Series G504 1st Ed. Sheet NC-28-12 Grid Ref. QO 803518	About 23 nm NNW of Port Loko, 1.5 nm S of Kambia town. 1.5 nm east of Kora river	NNE-SSW (207°/027°M) 3,000 x 75 ft Earth. 300/150 ft overruns NE/SW ends. Heron a/c in dry conditions. Capacity reduced when wet	None	Civil airstrip first reported 1949. Rehabilitated 1959 and extended 1965. Not in regular use but maintained for border security reasons
KENEMA (0818-8018) 07° 53' N 11° 11' W 485 ft GSGS 4695 Ed. 2 Sheet 818	1 nm NNE of Kenema 3 nm NW of Moa river between road and railway	NE/SW (230°/050°M) 4,600 x 150 ft. Bitmac. Suitable for DC.3 aircraft. 14,000 lbs ESWL at 50 lb psi. 400 ft stopway R/W 05	R/T and W/T homing facilities. Terminal and control building. Crash and fire equipment. Telephone and telegraph. Parking apron approx. 300 x 250 ft	Civil airfield constructed in 1961 to replace smaller strip nearer Kenema. Now in use by Heron a/c of Sierra Leone Airways
MAGBURAKA (0780-8041) 08° 44' N 11° 59' W 250 ft Series G504 1st Ed. Sheet NC-29-13	Approx 77 nm ENE of Freetown. 2 nm WNW of Magburaka just W of Magburaka/Makuri road	N/S (180°/360°M) 1,815 x 300 ft. Grassed laterite. Suitable light aircraft	Telegraph and rest house in Magburaka. No airfield facilities. Fire equipment on 48 hour request	Civil airstrip constructed 1941 later abandoned. Improved and re-opened 1958 and now used occasionally by charter a/c or in emergency
MARAMPA (LUNSAR) (0780-8042) 08° 42' N 12° 31' W 170 ft Series G504 2nd Ed. Sheet NC-28-16	16.5 nm ESE of Port Loko and 3 nm WNW of Marampa. 1 nm N of Port Loko/Marampa railway line	NE/SW (240°/060°M) 3,450 x 100 ft. Laterite gravel (grassed). Suitable Heron a/c and reported suitable for DC.3	R/T homing facility reported. Limited fire and crash equipment. Some cargo handling facilities. Telephone and Telegraph	Civil airfield operated by Seirra Leone Development Corporation. Opened 1962 but now used only very occasionally

SCHEDULE OF AIRFIELDS AND ALTERNATIVE NAMES (Contd)

NAME, CO-ORDINATES, ELEVATION, MAP & GRID REFERENCE	LOCAL POSITION	DIMENSIONS, SURFACE AND WEIGHT BEARING CAPACITY	FACILITIES	REMARKS
PORT LOKO (0780-8020) 08° 46' N 12° 46' W 160 ft Series G504 2nd Ed. Sheet NC 28-16 UTM Ref. GE441692	31.5 nm NE of Freetown. On E outskirts of Port Loko, just N of the Bankasoko river	E/W (270°/090°M) 3,270 x 200 ft. Overall strip length 4,000 ft 380 ft overrun at W end. Grassed laterite. Suitable for Heron a/c. Marginal for DC.3 a/c	On site - nil. Telephone, telegraph, water and rest house in Port Loko	Civil airstrip built in 1942. Used by RAF in WWII. Abandoned 1951. Improved and opened for use by domestic airline 1957. Currently available by prior permission only and closed in wet season
TONGO (0780-8043) 08° 12' N 11° 03' W 750 ft Series G504 1st Ed. Sheet NC 29-13	Reported some 62 nm ESE of Magburaka and 6 nm ENE of Panguma. The River Mali is approx 9 miles to the E	NE/SW 2,900 x 75 ft. Bitmac. Reported suitable for DC.3	Limited radio contact. Fire equipment on request	Private airstrip built by Sierra Leone Selection Trust in 1956. Used by Sierra Leone Airlines Heron a/c
WATERLOO (0780-8021) 08° 21' N 13° 03' W 90 ft Series G504 2nd Ed. Sheet NC 28-16 UTM Grid Ref. GE147227	14.5 nm SE of Freetown 1.5 nm E of Waterloo and just E of the Freetown/Daru railway	NW/SE (140°/320°) 4,080 x 150 ft Tarmacadam. Slight down slope from each end to centre. Bristol Freighter a/c (44,000 lbs AUW) have used	None	Used by RAF in WWII. Abandoned 1949. Cleared of bush in 1956 and R/W resurfaced in 1961. Reported in excellent condition (1968) but unattended and used only occasionally
YENGEMA (0780-8044) 08° 37' N 11° 03' W 1,300 ft Series G504 1st Ed. Sheet NC 29-13 UTM Grid Ref. R0836932	10 nm SSE of Kanama. Just SW of Yengema 6 nm SE of river Sewa	NNW/SSE (150°/330°M) 3,100 x 150 ft (Extendible). Bitmac. Heron a/c (13,000 lb AUW). N/S (180°/360°) 1,570 x 100 ft. Bitmac. (Probably only used for parking)	VHF and HF Comm. Apron 25,000 sq ft. Small hangar. Limited Avgas stock. Fire and crash equipment. Telephone and telegraph	Originally owned by Sierra Leone Selection Trust, now Government A/F. Main runway built 1961 and opened 1964. In use by Sierra Leone Airlines (Heron a/c)

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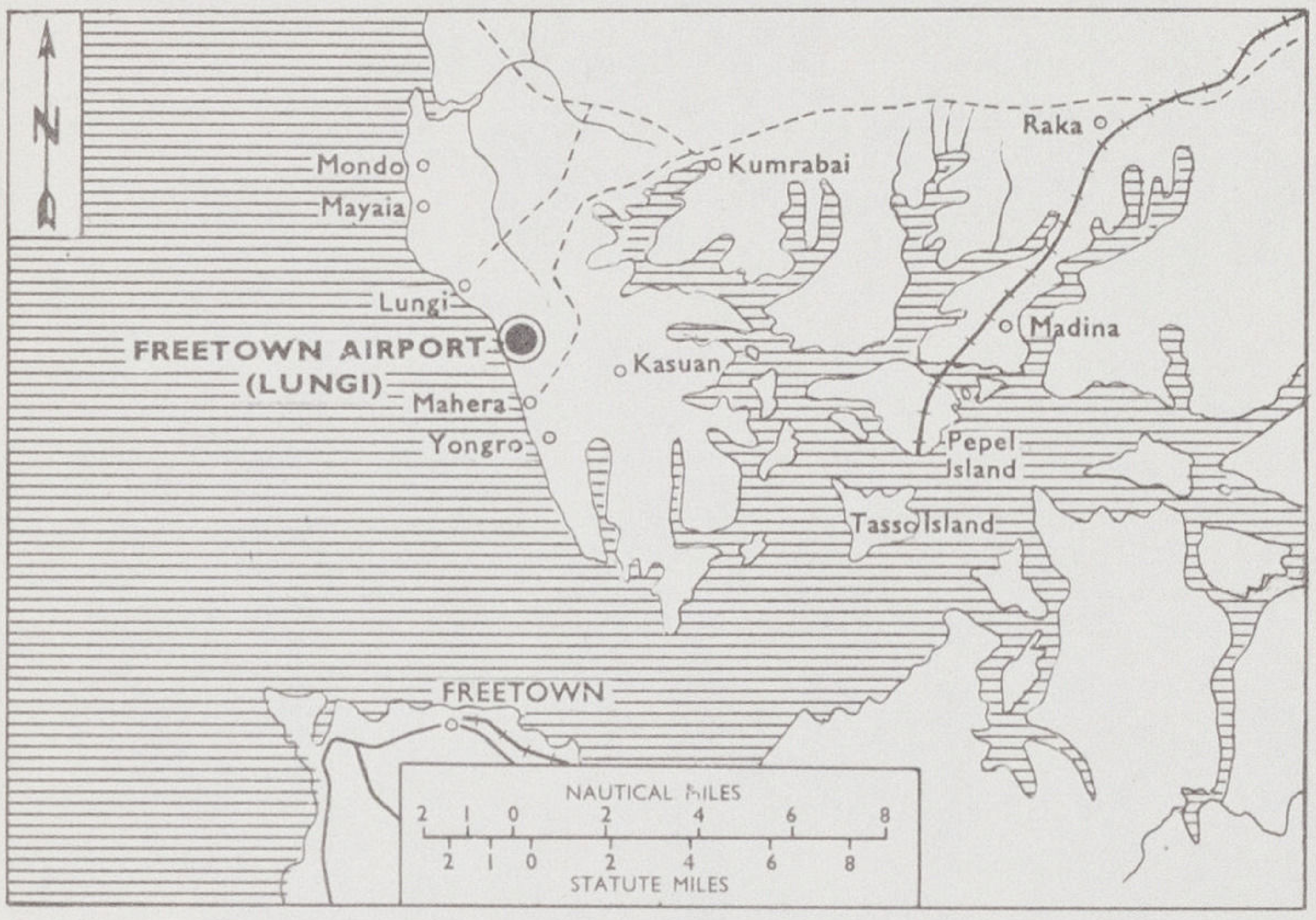


FREETOWN AIRPORT (LUNGI)

SIERRA LEONE

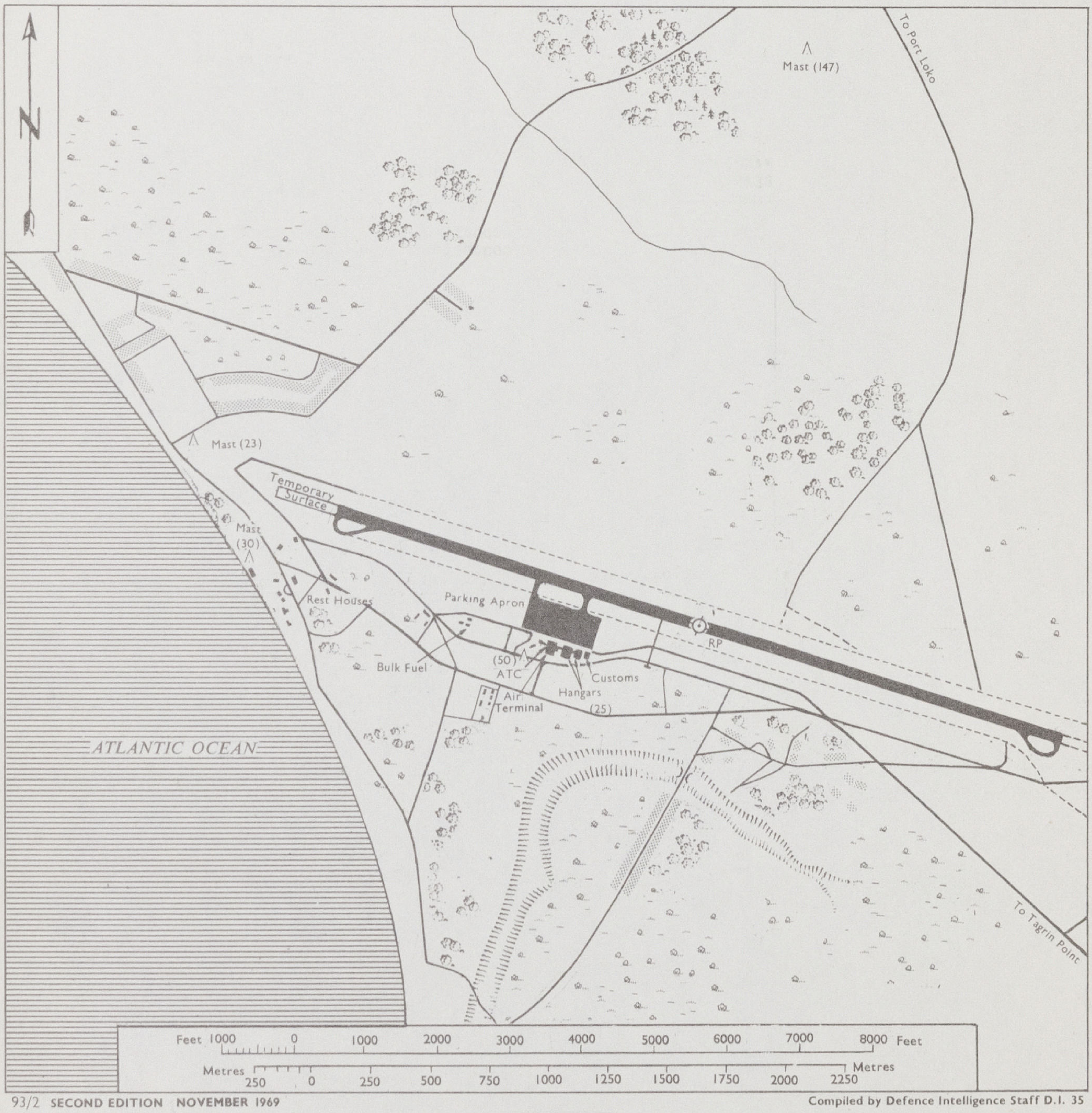
08° 37′ N.
13° 12′ W.

ELEVATION 83 FT.

A.M.S.L.

HEIGHTS IN FEET ABOVE MEAN SEA LEVEL ...... 480.
HEIGHTS IN FEET ABOVE AIRFIELD LEVEL ...... (100)

NOTE. This plan should be studied in conjunction with the latest airfield information sheet since (a) it is not possible to issue amended plans as frequently as revised information sheets and (b) additional information is often received in a form which is impossible to record pictorially.



Compiled by Defence Intelligence Staff D.I. 35

ISSUE DATE: December 1969
AL.1

COUNTRY SIERRA LEONE

FREETOWN AIRPORT (LUNGI)

MAP REFERENCES • G504 (1:250,000) Sheet NC 28-16
2nd Edition

08° 37' N
13° 12' W

ELEV: 83 ft

WAC/RAF CHART

GRID REF:

LANDMARKS AND SURROUNDING COUNTRY Situated on the Atlantic coast, approximately 8.5 nm NNE of Freetown and 1.8 nm SE of Lungi village. Pepel railway terminus lies 8 nm to the E.
Surrounding country, flat, largely consisting of creeks and swamps.

A/F REF. POINT Intersection of R/W and main access track.

OBSTRUCTIONS

TYPE	FEET ABOVE A/F LEVEL	FEET ABOVE MSL	LOCATION
Mast	147		NNE: at approx 1.4 nm
Mast	43		ESE: at approx 1 nm
Control tower			SSW: at approx 900 ft
Hangar	25		SSW: at approx 900 ft
Masts	50		SW: at approx 1,200 ft
Mast	30		W: at approx 0.7 nm
Mast	23		WNW: at approx 0.9 nm
Water tank	72		S: at approx 1,000 ft

Range of mountains with heights of 3,000 ft ASL extending NW/SE about 10 nm SSW of airfield. Overhead cables on W side of airfield. Trees off boundary on all sides.

RUNWAYS AND STRIPS

DIRECTION	MAGNETIC BEARING	DIMENSIONS (FEET)	SURFACE	CAPACITY (POUNDS	ELEV. (FEET)	SLOPE + OR –
WNW/ESE	122°/302°	10,500 x 150	Asphalt with 700 ft concrete at each end	LCN 80		

Additional Information: Graded shoulders 215 ft wide on each side of runway. Turning loops at each end of runway. The composition of the runway is understood to be 4 ins asphalt, 6 ins dry cement, 6 ins soil cement and 6 ins laterite on a base of well compacted soil.

NAT. SURFACE DIMENSIONS, SOIL AND DRAINAGE One asphalt runway with single apron on S side.
Off runway - alluvial soil with good natural drainage, liable to become soft in rainy season.

DAY MARKINGS AND WIND IND. Runway designation numerals "12" and "30". Signals square. R/W threshold and touchdown zone markings.
Windsock on each side of runway.

TAXI-TRACKS TARMACS AND DISPERSALS Concrete taxiways (75 ft wide - LCN 80) from central portion of runway lead to concrete parking apron (1,040 x 400 ft - LCN 80) in front of terminal building.

•Co-ordinates and Local Position are taken from this sheet

RADIO AIDS	R/T and/or W/T contact. Homing facilities.
NIGHT LANDING	Approach, threshold and runway lights. Obstruction lights. VASI. Emergency A/F lighting plus gooseneck flarepath in emergency. Flashing beacon.
FUEL STORAGE	Jet fuel and AVGAS available. Bulk fuel storage. JET - 80,000 gallons. AVGAS - 5,000 gallons. Hydrant Points 3 AVGAS 600 g.p.m.; 8 JET 600 g.p.m. Refuellers 1 AVGAS 100 g.p.m.; 3 jet 250 g.p.m. Fuel storage depot at Kissy West, AVTUR 3,390 tons. AVGAS 1,350 tons. Bridging: By road (120 miles) using 4 x 1,500 gal tankers (1 trip each per day); BY Ferry: 72,000 gals per day.
HANGARS WORKSHOPS POWER SUPPLY ETC.	On S side:- One metal hangar (175 x 122 x 25 ft) Minor repair facilities. Fire fighting and crash equipment. Cargo handling equipment. Oxygen available.
ADMINISTRATIVE BUILDINGS	On S side:- Terminal building (converted hangar). Control tower. Customs facilities. 12 bed emergency ward at airfield. Hospital at Freetown. Restaurant.
DOMESTIC ACCOMMODATION	Rest house accommodation for 24 persons adjacent airfield. Hotels and transit camp at Freetown.
TELE-COMMUNICATIONS	Telephone. Telegraph and cable at Freetown.
WATER	Ample supplies of fresh water.
AMMUNITION STORAGE	
DEFENCES	
ACCESS:- ROAD	Access to airfield from Freetown by road and launch.
RAIL	Single track lines at Freetown and Pepel.
WATER	Port facilities for ocean-going vessels at Freetown.
OPERATORS AND USERS	Civil Aviation Administration. International and domestic airlines.
METEOROLOGICAL INFORMATION	Met. office at airfield. *Prevailing winds:* March to November, W to SW. December to February, E to NE. *Rainy season:* May to October. Heaviest between July and September. *Visibility:* Generally good. Frequent morning fog December to January. *Aerodrome reference temperature:* 28.6°C.
REMARKS	This airfield was constructed in 1943 as an emergency landing ground for the Royal Air Force, and was used as an alternative to HASTINGS airfield for fighter operations. In 1945 it was vacated by the Royal Air Force and taken over by the government of Sierra Leone as a civil field. During 1956/57 the runway was extended and resurfaced, and the airfield was opened to regular use by international and domestic airlines. In 1967 an additional extension of the runway to 10,500 ft was completed. Further improvements to airfield facilities are under consideration. These include a further extension of runway, new terminal and control buildings and a taxiway parallel to the runway.

SIERRA LEONE

APPENDIX 'A' - FORMER LANDING GROUNDS AND ALIGHTING AREAS

The following list includes (a) landing grounds previously reported but believed to have been abandoned and no longer usable, (b) surveyed sites and (c) flying-boat alighting areas not in use and with no facilities.

NAME AND CO-ORDINATES	LOCAL POSITION	DIMENSIONS AND SURFACE	REMARKS
FREETOWN FBAA 08° 29' N 13° 12' W	NE of town, in the mouth of Sierra Leone River	30,000 x 10,000 ft	Former BOAC base
JUI FBAA 08° 25' N 13° 08' W	6 nm SE of Freetown, in Hastings creek	12,000 ft	Former RAF base, vacated at the end of World War II
KENEMA (OLD) 07° 52' N 11° 12' W	2.5 nm from Town	2,550 ft. Tarmac	Replaced by new A/F nearer the town. 1961
KISSY 08° 28' N 13° 11' W	2.5 nm ESE of Freetown	3,000 x 600 ft. Grass	Constructed 1941 by RAF but later abandoned
MOYAMBA 98° 09' N (T) 12° 26' W	Between Hastings and Bo	No information	Constructed for light aircraft 1949. No further information
WELLINGTON 08° 27' N 13° 10' W	Immediately SE of Wellington bweteen road and railway	2,100 x 600 ft	Civil LG prior to 1939. Reported overgrown 1947

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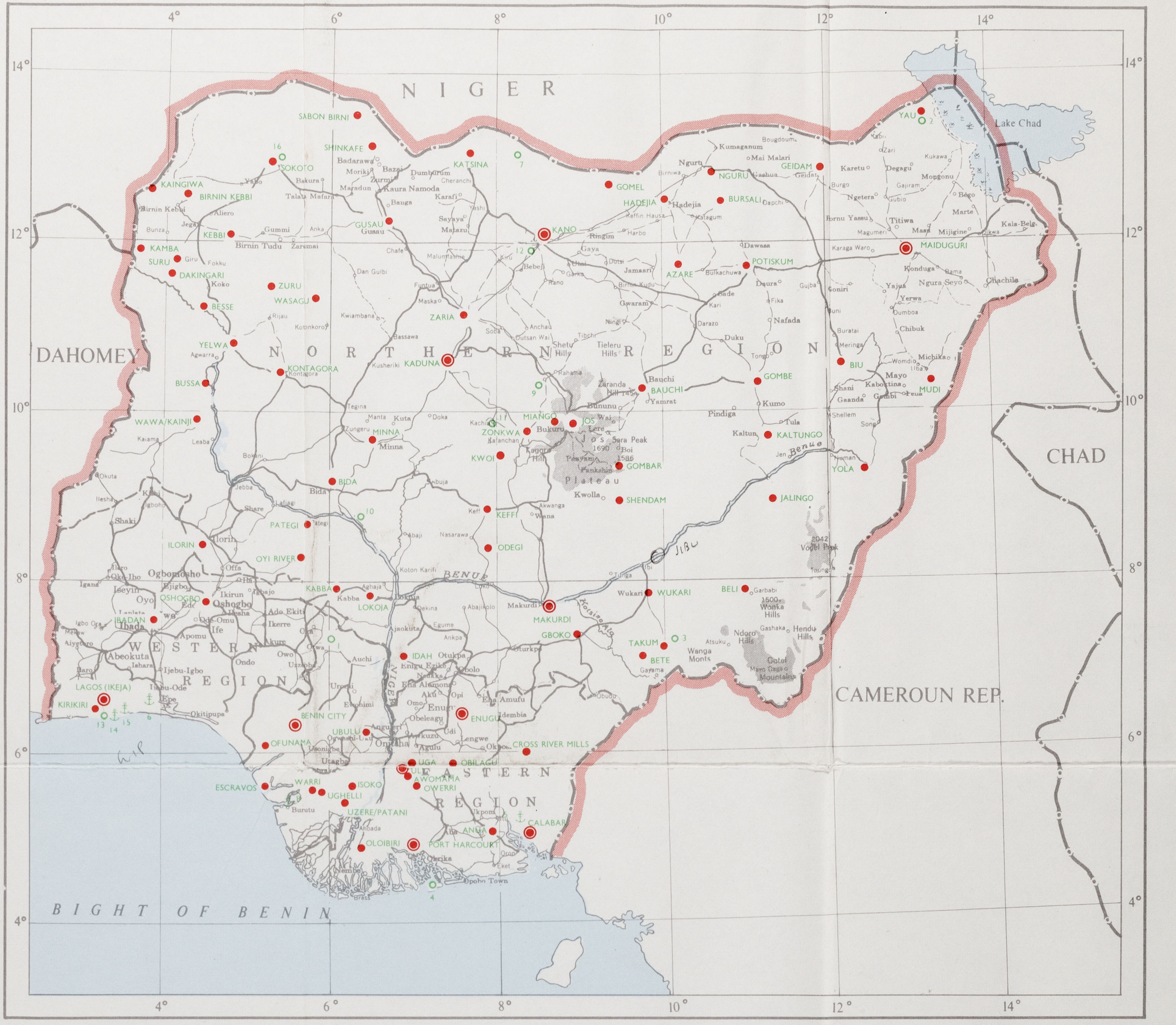
AIRFIELD LOCATIONS

J5/93 APPENDIX "B"

KEY TO NUMBERED SYMBOLS

1. AGBABOU
2. AREGE
3. BÁISSA
4. BONNY
5. CALABAR FBAA
6. EPE FBAA
7. DAURA
8. FORCAĐOS FBAA
9. GURE
10. HACHIA
11. KACHIA
12. KANO SOUTH
13. LAGOS/APAPA
14. LAGOS/APAPA FBAA
15. LAGOS/LAGOON FBAA
16. SOKOTO (OLD)

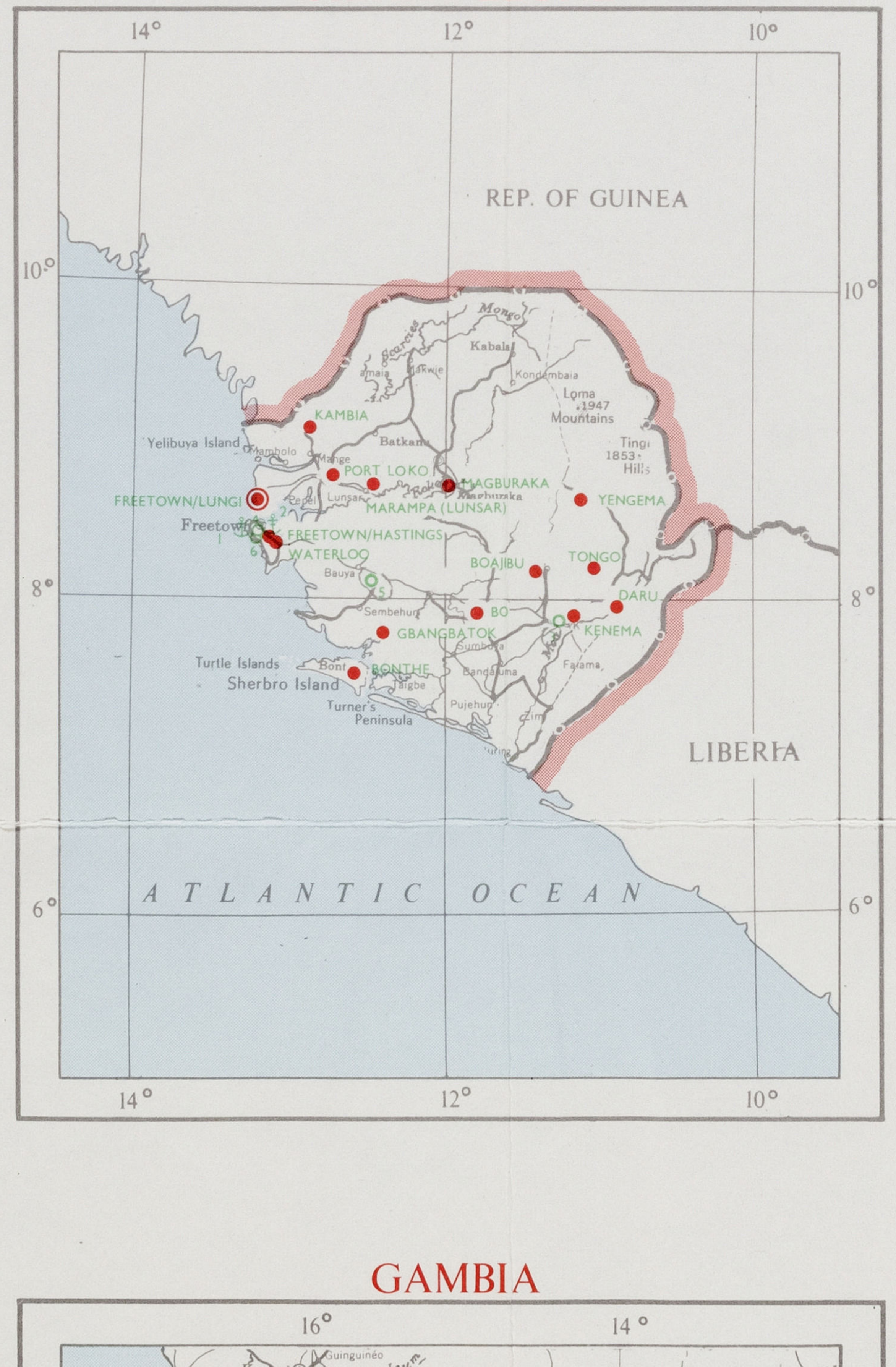


NIGERIA

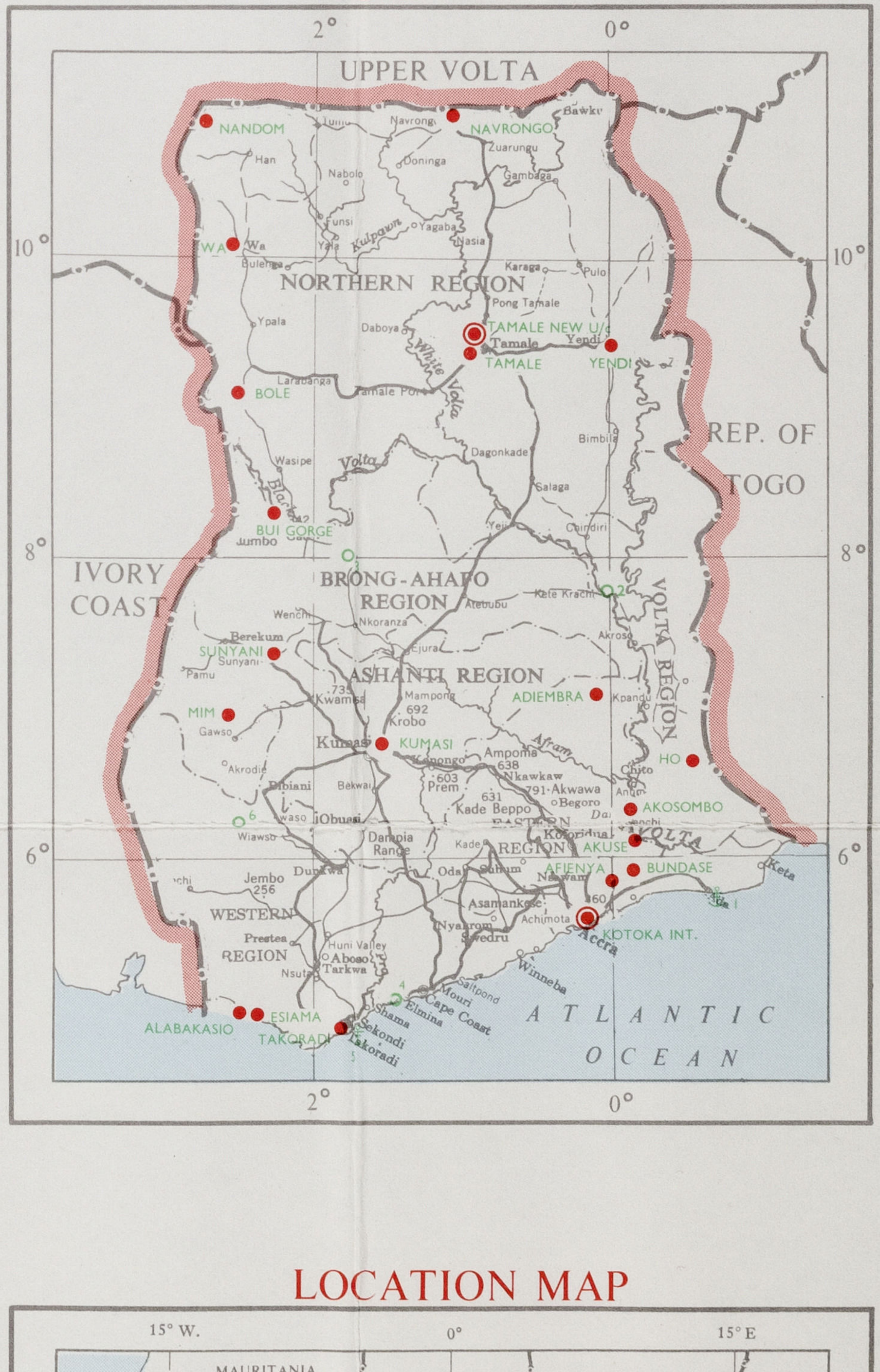
SIERRA LEONE

KEY TO NUMBERED SYMBOLS

1. FREETOWN FBAA
2. JUI FBAA
3. KENEMA (OLD
4. KISSY
5. MOYAMBA
6. WELLINGTON



GHANA



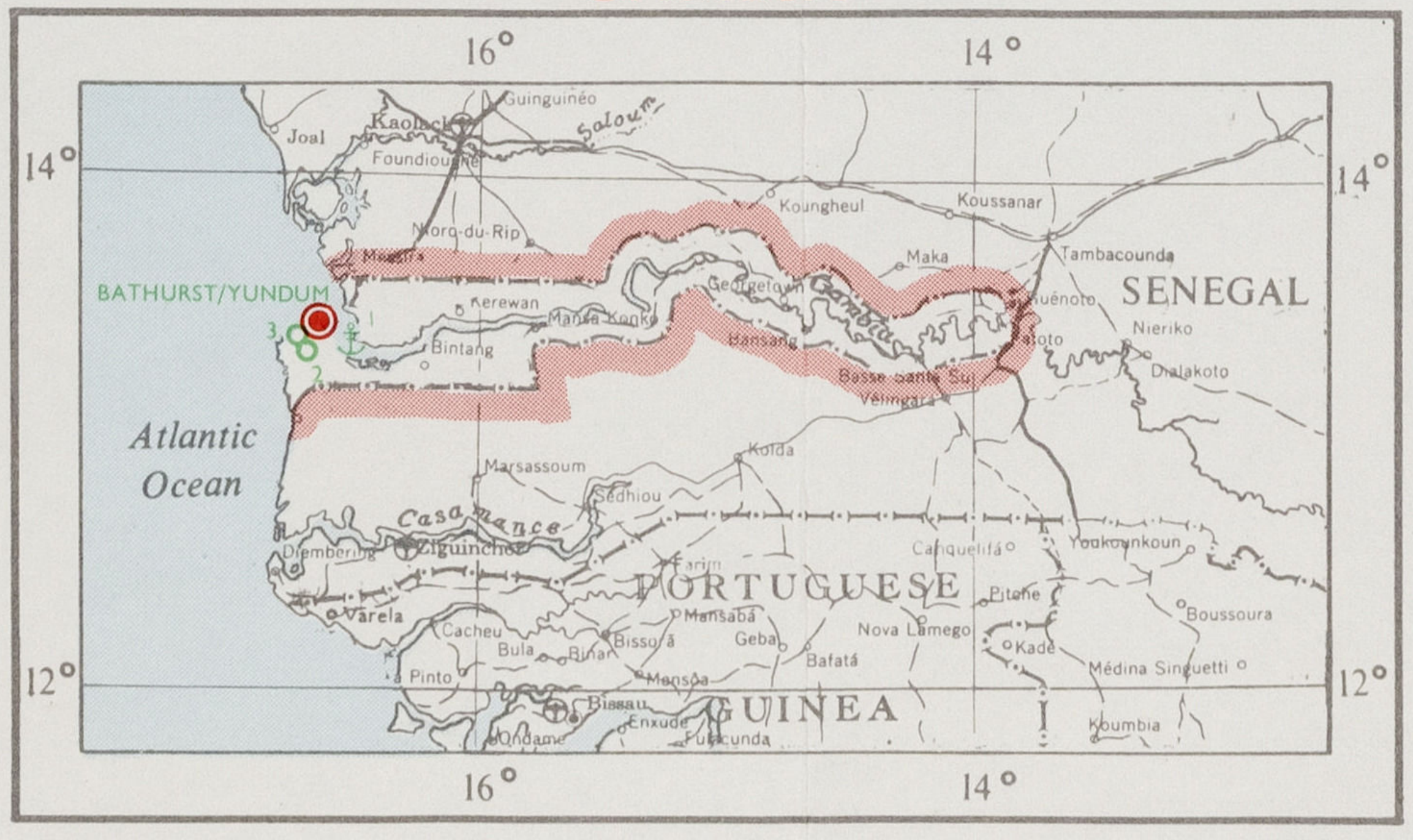
KEY TO NUMBERED SYMBOLS

1. ADA FBAA
2. KETE KRACHI
3. KINTAMPO
4. KOMENDA
5. TAKORADI FBAA
6. WIAWSO

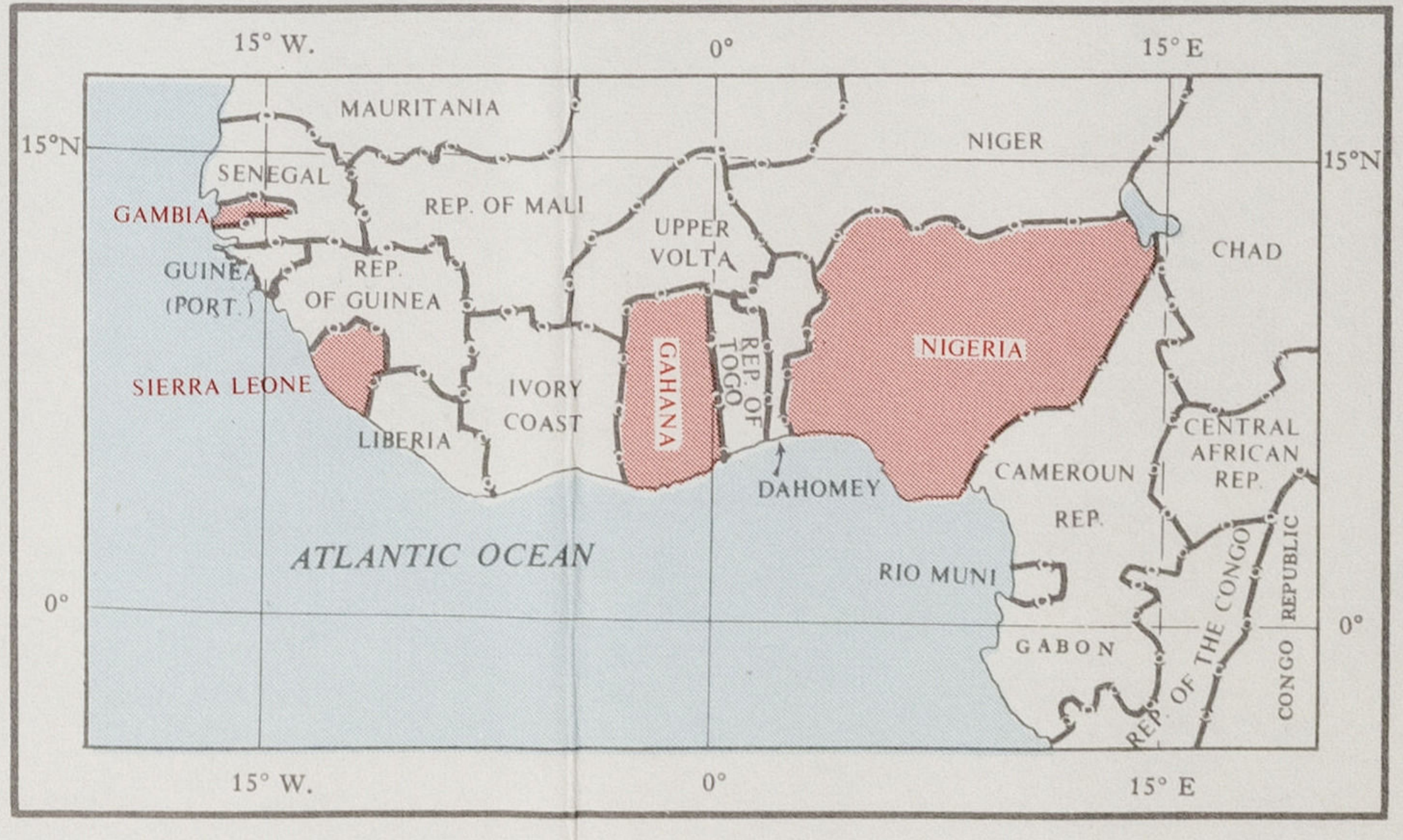
GAMBIA

KEY TO NUMBERED SYMBOLS

1. BATHURST/HALFDIE FBAA
2. BRIKAMA
3. JESWANG



LOCATION MAP



LEGEND

- ◉ ..... Airfields with good hard-surfaced runways of about 6,560 ft. (2,000 m.) or more, and others of importance
- ● ..... Other usable airfields.
- ⚓ ..... Flying-boat bases or alighting areas.
- ○ ..... Former landing grounds.
- ⚓ ..... Former flying-boat bases or alighting areas.

100 0 100 200

Nautical Miles

Scale is common to the four maps

J5/93/17 SECOND EDITION NOVEMBER 1969

COMPILED & DRAWN BY DIS (DI. 35 & DI. 13e)

3254 DEFE 60/227

SECRET
J5/93

AIRFIELDS - GAMBIA, GHANA, NIGERIA AND SIERRA LEONE [redacted]

D.I.S.
LONDON